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OCTOBER, 1896.

LECTURES ON PUERPERAL SEPSIS.[1]

By Barton Cooke Hirst, M.D.,

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Historical.

The history of the acquisition of what knowledge we possess of puerperal infection is distinctly modern. It had its earliest beginning about fifty years ago and dates back in reality scarcely twenty-five years. Indeed, one may say that a true comprehension of the causes and nature of puerperal sepsis has been acquired only within ten years, and that the last five years have contributed more information on this subject than all the previous ages of medicine. Only twelve years ago (1884) the late Fordyce Barker, regarded by many as the leading obstetrician of America, delivered himself of this astounding utterance:

"And so, by the microscopical researches of Tigri, Davaine, Leplat and Jaillard, Burdon-Sanderson, Coze and Feltz, and others, the infusoria called bacteria were discovered and found to be a constituent of septicemic blood, and thus we have been furnished with another element of distinction between septicemia and pyemia. These bacteria, however, seem to be a product of changes effected in the blood by septic poisoning rather than a cause of the morbid phenomena which appear in septicemia, for the experiments of Bergmann and others have demonstrated that, when these bacteria are alone introduced into the blood, they give rise to none of these phenomena, and are absolutely innocuous."

The history of medical views on the septic fevers of the puerperium prior to the middle of the present century is a long record of error and ignorance. From the earliest beginning of medical litera-

[1] Delivered at the University of Pennsylvania.

ture to the present century puerperal sepsis was ascribed to suppression of the lochia. This dogma held undisputed sway until 1670, when Puzos, a Frenchman, advanced the theory that all puerperal fevers were due to a metastasis of milk, which flowed in the blood during pregnancy and was normally attracted to the breasts after delivery, but which might be drawn to other organs or structures, especially the peritoneum, with disastrous results. This theory found support in the reports of a number of post-mortem examinations stating that milk had been found in the peritoneal cavity after deaths following childbirth.

A little later English and German observers explained the puerperal infectious fevers by attributing them to inflammation of the womb and of the peritoneum, without accounting satisfactorily for the occurrence of these inflammations. Occasionally one finds a reference to putrid fevers in the puerperium, a suggestion that putrefying animal matter may occasion disease in human bodies with which it comes in contact, an intimation of the contagiousness of puerperal fever, but these were mere glimmerings of light that flickered out at once without illuminating the general ignorance. Credit, however, must be given to some of the English writers of the first half of the present century for insisting upon the contagiousness of puerperal fever.

Three events laid the foundation of our present knowledge of puerperal sepsis: The publication of Oliver Wendell Holmes's paper on "The Contagiousness of Puerperal Fever" in 1843, the observations of Semmelweiss in the Vienna Hospital, 1846–48, and the publication of Sir James Y. Simpson's paper on the "Analogy between Puerperal and Surgical Fevers" in 1850.

The first of these papers must always remain a classic in medical and English literature. As a justification of this statement, let me read you its concluding paragraphs, with the advice that you get the whole article and read it for yourselves.

"I have no wish to express any harsh feeling with regard to the painful subject which has come before us. If there are any so far excited by the story of these dreadful events, that they ask for some word of indignant remonstrance, to show that science does not turn the hearts of its followers into ice or stone, let me remind them that such words have been uttered by those who speak with an authority I could not claim.[1] It is as a lesson rather than as a reproach that I call up the memory of these irreparable errors and wrongs. No tongue can tell the heart-breaking calamity they have caused; they have

[1] Dr. Blundell and Dr. Rigby in the works already cited.

closed the eyes just opened upon a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into the stranger's arms, or bequeathed it, with less cruelty, the death of its dying parent. There is no tone deep enough for regret, and no voice loud enough for warning. The woman about to become a mother, or with her newborn infant upon her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden or stretches her aching limbs. The very outcast of the streets has pity upon her sister in degradation, when the seal of promised maternity is impressed upon her. The remorseless vengeance of the law, brought down upon its victim by a machinery as sure as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multiplied trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful period, should hazard it negligently, unadvisedly, or selfishly!"

This unanswerable arraignment of the prevailing belief in regard to puerperal sepsis, this magnificent appeal and clarion note of warning fell upon deaf ears. The very men who should have first recognized its truth, who should have most heartily welcomed the revelation, opposed with all their might the new doctrine, because, forsooth, it ran counter to their teaching. At that time in this country two men were so pre-eminent in obstetrics that they were practically without rivals and autocratically dictated their views to a vast number of unquestioning followers. These men were Hodge and Meigs, holding respectively the chairs of Obstetrics in the University of Pennsylvania and in the Jefferson Medical College.

Meigs directed against Holmes's teaching all the satire and ridicule of which his brilliant mind was capable, descending often to undignified abuse; Hodge inveighed against it with a ponderous invective worthy of an editor of the *London Times*. But in spite of this powerful opposition the doctrine of the contagiousness of puerperal fever made rapid headway and gained from year to year an increasing number of converts in this country and in England. Hodge's immediate successor, my predecessor, Dr. Penrose, taught it most impressively from this chair.

In 1846 a young *privat-docent* in the University of Vienna, named Semmelweiss, was struck with the frightful mortality in one of the maternity wards of the General Hospital, while in a neighboring ward the death-rate was scarcely one-tenth so great. He discovered that in the first ward the women were attended by students who

were in the habit of coming fresh from post-mortem examinations in the Pathological Department to the bedsides of the parturient patients. In the second the women were attended solely by midwives. Semmelweiss conceived the idea that the students carried on their hands putrid products from the post-mortem table to the lying-in women whom they examined, and that these products were responsible for the large number of fatal inflammations and fevers that attended the students' work. He consequently ordered that no student should examine a woman until he had washed his hands in chlorine water. The results of this regulation were fairly startling, as is shown in the accompanying table:

Year.	Confinements.	Deaths.	Per Cent.
1846	4010	459	11.4
1847	3490	176	5.
1848	3556	45	1.27

It should be stated that the rule compelling the students to wash their hands in an antiseptic solution was put into effect in the middle of the year 1847.

Semmelweiss recognized the transcendent importance of his discovery. He preached his new doctrine in season and out of season, endeavoring to impress it upon his immediate colleagues and upon the medical societies and periodical medical literature of the time in Europe. But he got for his pains nothing but ridicule, contumely, opposition or indifference. He finally went insane from chagrin and disappointment, ending his days in a lunatic asylum in Buda-Pesth.

Simpson's paper, published in 1850, showed the identity of puerperal fever and wound infection as plainly as it could be shown before the advent of bacteriology.

More than twenty years after Semmelweiss's discovery and the appearance of Simpson s paper, the mortality of many lying-in hospitals in Europe remained as high as 10 per cent. Then came the brilliant discoveries of Pasteur in the field of bacteriology, the application of antisepsis to surgery by Lister, and the adoption of the system almost immediately by obstetricians. From that day to this there has been a steady and increasingly rapid acquisition of knowledge of the etiology of septic infection, of its most successful preventive and curative treatment.

Best of all, we have developed the modern attitude of mind. We are prepared and alert to test any claim, any method of treatment, curative or preventive, that appeals to our reason. We are ready

ruthlessly to cast aside our most cherished beliefs if it can be demonstrated that they are mistaken.

It is impossible that we can ever again be deaf and blind to such an appeal as that of Holmes, to such a demonstration as that of Semmelweiss.

Etiology.

It has become necessary to study the normal and abnormal microbic flora of the vagina if one wishes to understand fully the etiology of puerperal infection and to comprehend the safe-guards that nature affords a woman against infection after labor.

The effective study of the subject dates from Döderlein's monograph, published in 1892.[1] Before this time the presence of bacilli in vaginal secretions was noted by Hausmann, Gönner, Bumm, Winter, and Steffeck. Gönner, in 1887, found in vaginal secretions many varieties of micro-organisms, mainly, however, bacilli, which were extremely difficult to cultivate in the ordinary culture media. The cocci in the secretions, many of which could be cultivated with ease, were found to be non-pathogenic.

Gönner concluded that the vaginal secretions contained no pathogenic bacteria.

Bumm also failed to find pathogenic germs in the vagina.

Winter believed that pathogenic germs were present in the vagina in a state of lessened or absent virulence.

Döderlein examined the vaginal secretions of 195 pregnant women. In these examinations notice was taken of the macroscopical appearance, and of the reaction of the secretions, and as the result of this preliminary examination the secretions were declared to be normal or abnormal. In the two conditions the bacteriological find was quite different. In the normal secretion, which was of whitish color, of the consistency of curdled milk unmixed with mucus, containing epithelial cells and mucous bodies, moistened by an exudate from the vaginal mucous membrane and of an intensely acid reaction, there was found almost exclusively a certain kind of bacillus possessed of distinctive and characteristic qualities. No pathogenic germ was ever found by Döderlein in normal vaginal secretions, except a thrush fungus which is capable to a very limited extent of producing suppuration and destruction of tissue when injected under the skin or into the eye of an animal. In the pathologic, abnormal secretion which was yellowish or greenish in color, of the consistency of cream,

[1] Das Scherdensekret und seine Bedeutung für das Puerperal Fieber, Albert Döderlein, Leipzig, 1892.

weak acid or alkaline in reaction, mixed with mucus, containing often bubbles of gas, and secreted usually in very large quantities, the greatest variety of cocci and bacilli could be found.

Of his 195 pregnant women Döderlein found that 55.3 had normal and 44.6 had pathological secretions.

Although a number of observers had found bacilli in the vaginal secretions before Döderlein, no one had so carefully studied their characteristics, functions, and cultivation, so that they are properly called the vaginal bacilli of Döderlein. They are, according to him, anaërobic. They have no motion. They produce by their life process an acid medium by forming lactic acid. They are frequently associated with an yeast fungus (36 per cent. in normal secretions only) which Döderlein believes to be identical with the thrush fungus, monilia candida Bonorden.

The vaginal bacilli are antagonistic to staphylococci, which they have the power to destroy within certain limits. This was shown by several experiments, among others by infecting the vagina of a virgin with staphylococcus cultures in large quantities. Within four days the staphylococci had disappeared, and no bacteria remained within the vagina, except the vaginal bacillus.

Döderlein attributes the germicidal action of the normal vaginal secretion to the production of an acid environment by the vaginal bacillus. He supports this view by the following facts:

(1) That all pathological secretions swarming with saprophytes and with many pathogenic germs are weakly acid or alkaline.

(2) That in a puerpera the vaginal bacillus disappears and in its place are found many kinds of saprophytes, the lochial discharge being alkaline.

(3) That when the lochia ceases the saprophytes disappear, the vaginal bacillus reappears, and the vaginal secretion becomes again intensely acid.

In only eight out of the 195 cases examined were streptococci found, and in only five of these cases was it possible to demonstrate by inoculation experiments that the streptococci were virulent. In two cases the streptococcus possessed no virulence at all.

These discoveries of Döderlein have not been universally accepted. His views have not gone unchallenged, and further interesting properties of the vaginal secretions have been pointed out by others, but we may safely acknowledge Döderlein's conclusions to be correct in the main, as far as they go, and that his discoveries constitute the most important advance in the knowledge of this subject achieved by a single individual.

Following this study have appeared a number of exhaustive

studies, the most important conclusions of which I have set down in a rather hap-hazard fashion in the following pages.

In a series of examinations, conducted by Burgubru, Williams, Stroganoff, and Burkhardt, in 12, 15, 9, and 16 cases respectively, streptococci were found in 1, 3, 2, and 5. Or, taking the sum total of all these cases with Döderlein's, streptococci were found twenty-seven times in 542 women examined, showing that in only a small proportion of cases are dangerous pathogenic germs to be found in the vaginal secretions of pregnant women; and accepting Döderlein's results as correct, along with those of Winter, even of this small proportion of cases in which streptococci were found, a considerable proportion of the streptococci were non-virulent.

Krönig,[1] in about 200 examinations, found that the vagina in pregnant women, aside from the gonococcus and the thrush fungus, contained no pathogenic micro-organisms. The streptococcus was not found in a single case. Adding these examinations to the former series, the proportion of cases in which the streptococcus may be found is, as appears, still further reduced. Moreover, Krönig found after inoculating the vagina with pure cultures of streptococcus, staphylococcus, and bacillus pyocyaneus that none of these micro-organisms could be discovered after eleven to twenty hours.

Krönig attributes the germicidal properties of the vagina, which are demonstrated by these observations, to the flow outward of the vaginal secretions, and not to any special microbe having its normal habitat in the vagina. According to this observer, acid, neutral and alkaline secretions, all have germicidal power. Further, Krönig found that if an hour after the infection of the vagina an antiseptic douche of lysol were administered, not only were the infecting micro-organisms not destroyed by the douche, but also that it took the vaginal secretions nineteen to thirty-six hours to destroy microbes that without the douche would disappear in eleven to twenty hours.

These results were confirmed by Menge [2] in a study of the germicidal power of vaginal secretions in non-pregnant women, except that Menge occasionally did find streptococci in the vagina. From a number of observations and experiments this observer forms the following conclusions as to the causes of the germicidal power of vaginal secretions, putting them down in the order, as he believes, of their importance:

The antagonism of the normal microbic flora of the vagina and the pathogenic micro-organisms which may be deposited there by accident.

[1] Deutsche medicinische Wochenschrift, October 24, 1894, 819.

[2] Deutsche medicinische Wochenschrift, October 24, 1894, p. 819.

The products of the life process of the vaginal bacilli.

The acidity of the secretions.

The germicidal powers of the anatomical elements of the vagina.

The leucocytosis which is provoked by chemotactic action either of the vaginal discharges or of the infecting micro-organisms invading the vagina.

The phagocytosis following leucocytosis.

And the absence of free oxygen in the vagina.

Walthard [1] has recently contributed valuable information from the bacteriological study of the vagina in 100 women *ante et post partum.*

According to Walthard, the genital canal of women is divided practically into two parts, one infected, the other sterile. The former comprises the vestibule, the vagina, and lower portion of the cervical canal. The latter, the upper portion of the cervical canal, the uterine cavity, and the tubal canals. The causes of this division of the canals, according to Walthard, are—

(1) The plug of mucus stopping up the cervical canal, which, though not in itself germicidal, is poor in albuminoids, and furnishes no nutriment for micro-organisms.

(2) The leucocytes which are found in great numbers where the cervical secretion mixes with the vaginal secretion at the level of the external os.

According to this observer there are really three divisions of the genital canal; one, the lower containing leucocytes and bacteria; the next containing only leucocytes; and the third, the upper, containing neither leucocytes nor bacteria.

It is supposed that the outpour of leucocytes is due to a chemotactic action excited by the mixture of cervical and vaginal discharges, and that the phagocytosis follows naturally the leucocytosis.

In the vaginal discharges Walthard found both during pregnancy and after delivery pathogenic microbes, streptococci, staphylococci, gonococci, and the colon bacilli. The first-named were found in 27 out of the 100 women examined, but these streptococci had lost all virulence and had become veritable saprophytes. Inoculation experiments with them produced no results,—that is, if they were inserted in normal tissues; but if a certain region of the animal's body was reduced in vitality, or if the condition of the animal's system was lowered in any way, the inoculation of these streptococci,

[1] Archiv für Gynäkologie, Vol. XLVIII, p. 201.

produced abscesses in which the micro-organisms rapidly regained all their original virulence until they became quite as deadly as the most dangerous of their kind. From his experiments and observations Walthard draws the following conclusions:

The virulence of vaginal streptococci of a pregnant woman not examined for some time is equal to that of the streptococci that live upon other mucous membranes or in their secretions. In other words, the vaginal streptococci are not virulent, and behave as saprophytes upon healthy tissues, but, as in the case of the intestinal streptococci, the vaginal streptococci can become infectious when the resistance of the tissues with which they are in contact is diminished. The virulence that the vaginal streptococci attain under these circumstances is quite equal to that of the streptococci of puerperal infection.

Stroganoff,[1] from an examination of eleven pregnant women, supports Döderlein's assertion, that the vaginal bacillus produces by its development lactic acid, and shows that while the vaginal secretions of the new-born are very weakly acid, they become more and more acid as bacteria develop in the vagina. He quotes experiments of Schlutter, showing that an acid medium retards the growth of the staphylococcus, and is destructive to the streptococcus of erysipelas. He further shows by experiments with culture media that the vagina bacillus produces not only an acid medium, but also other products of its life processes that retard or prevent the growth of the staphylococci.

In these experiments the vaginal bacillus was cultivated and the culture then raised to a high temperature so that the bacilli were destroyed. The culture was then inoculated with the staphylococcus pyogenes albus with negative result. If the culture, in addition to being treated as described, was made alkaline, the staphylococci grew, but not so vigorously as upon the same culture medium in which the vaginal bacillus had not been grown.

Stroganoff explains the sterility of the upper cervical canal and of the uterine cavity by the active germicidal properties of the cervical mucus, by the mechanical action of the flow of menstrual blood, by the same action of the descending placenta and membranes, and by that of the lochial discharge. Perhaps there should be added the germicidal effect of blood itself, which property it has been recently demonstrated that blood possesses to a certain extent.

Stroganoff announces the following conclusions from his study: One finds in the vagina of pregnant women always a quantity of

[1] Monatschrift für Geburtshülfe und Gynäkologie, Band II, p. 381.

micro-organisms. The prominent form in normal cases is the bacillus, but there are in addition usually other forms present. Micro-organisms which liquefy gelatin are met with comparatively seldom in normal cases, and then only in small numbers. A pathological condition of the vaginal mucous membrane alters the normal flora. The vaginal secretion of pregnant women is strongly acid in reaction. In addition to micro-organisms, one sees usually under the microscope epithelial cells and isolated white blood-corpuscles. The cervix contains normally no micro-organisms. When these are present in that situation their number is small. The reaction of the cervical secretion is alkaline. In not a single case were there organisms in the cervix which liquefied gelatin. The external os is usually the boundary between that portion of the genital canal that contains micro-organisms and that portion which does not.

Vahle[1] finds that for the first twenty-four hours the vaginal secretions of new-born infants are sterile. By the third day they always contain micro-organisms, and in a considerable proportion of cases the staphylococci pyogenes albus and aureus, and a streptococcus.

Stroganoff finds that within a few hours of birth the vagina becomes infected, and that in a certain proportion of cases the inoculation occurs *in utero*, or during the passage of the child's body through the vagina. This is most likely to occur in breach presentations. A great variety of micro-organisms may be found in the vagina of the newly-born, including streptococci, diplococci, staphylococci, etc.

From this mass of facts, set down without any special order, confusing in its complexity and occasionally in its apparent contradictions, the practical physician may draw the following conclusions, I think, as to the etiology of puerperal sepsis, the most effective preventive treatment of infection, and the resisting power of the vagina against pathogenic infection: The vagina becomes infected almost immediately after birth. In a normal condition it contains no pathogenic bacteria. It has strong germicidal powers which serve to guard a woman against infection. These powers depend, as far as our personal knowledge goes, upon the presence of a special bacillus, and upon the products of its life processes; upon the leucocytosis due to chemotactic action; upon phagocytosis; upon the germicidal powers perhaps of the anatomical elements of the vagina, of the cervical mucus, and of the bloody discharge during menstruation and the puerperium.

During and after labor, mechanical safe-guards of the most effec-

[1] Zeitschrift für Geburtshülfe und Gynäkologie, Band XXXII, Heft 3, v.

tive kind are furnished against infection. These are the discharge of the liquor amnii, washing out the vagina, the passage of the child's body, scrubbing the vagina out, the descent of the placenta and membranes, and the bloody discharge which follows.

Moreover, should the vagina contain pathogenic bacteria, they are likely to be in a condition of diminished or absent virulence, in which they will not be productive of disease.

Bearing these facts in mind, it would seem that the common practice of relying upon simple vaginal douching for disinfecting the vagina before labor, or before some gynecological manœuvre or operation, is faulty, not to say foolish. It has been clearly demonstrated that the injection of an antiseptic fluid into the vagina will not destroy pathogenic germs there, and will rob the woman to a certain extent of the safe-guards that nature provides for her against infection. If, therefore, under certain circumstances, it is desirable to disinfect the vagina, mere douching should not be depended upon, but the vaginal mucous membrane should be thoroughly scrubbed out as well as douched, just as one would prepare the skin for an important surgical operation. It has long been my practice not to use objective antisepsis unless I see good reason for it in macroscopic evidence of a pathological condition of the vagina, but to confine my efforts to subjective antisepsis,—that is, to the most thorough cleanliness of my hands, of my implement, and of the hands of the attendants who came in contact with the patient. When, in consequence of some diseased condition in the vagina, it is advisable to disinfect the lower genital canal, one should proceed just as though he were about to undertake some serious gynecological operation. He should not depend, as so many general practitioners do, simply upon an antiseptic vaginal douche.

It will appear clearly, I think, to any one that these remarkable discoveries in regard to the micro-organisms normally present in the vagina, do not in the slightest degree lessen the importance of antiseptic precautions on the part of medical or other attendants upon a patient in labor. The presence of these organisms in the vagina might possibly be used as an argument against the necessity for antiseptic precautions. For, it might be said, the vagina being already infected, it is unnecessary to observe such elaborate precautions against infecting it still more.

But when one considers that the micro-organisms in the lower genital canal are not pathogenic at all in the vast majority of cases, and that when they are, nature has diminished in many an instance their virulence, it must appear that it is incumbent upon any conscientious man not to insert in the vagina infecting bacteria which may, by their

number and virulence, overcome all the safe-guards that nature throws about women in this condition, and may consequently be the cause of a serious and fatal disease.

The Pathogenic Microbes Capable of Producing Local Inflammation and General Systemic Infection when Introduced into the Genital Canal or Deposited upon its Entrance.—Döderlein found in five cases of serious puerperal infection the streptococcus pyogenes as the sole infecting agent.

Czerniewski, in fifty-three cases of puerperal infection, found streptococci in forty-nine. In a histological and bacteriological examination of sixteen cases of puerperal fever Widal found streptococci in fourteen, bacilli in two. Bumm, in an examination of seventeen cases of puerperal infection, found streptococci in all, five times as pure cultures, twelve times mingled with small numbers of staphylococci and of other germs. Thus in a total of ninety-one cases, the streptococcus was found to be the infecting agent in eighty-five, or 94 per cent.

Following streptococci, but a long way behind as the cause of puerperal infection, are the pyogenic staphylococci, the colon bacillus, the gonococcus, the bacillus pyocyaneus, the bacillus fetidus, the pneumococcus, the Klebs-Löffler bacillus of diphtheria, the tetanus bacillus, and possibly any germ at all that inserted into living tissues or deposited upon weakly-resisting surfaces is capable of causing local inflammation or general disease. In addition to these specific septic micro-organisms the saprophytes of decomposition play an important *rôle* in the common form of puerperal sepsis, caused by the absorption of toxines or ptomaines produced in the decomposition of dead animal matter.

The Manner in which Pathogenic Organisms find an Entrance into the Genital Canal.—The majority of puerperal infections are traceable to the insertion of pathogenic germs by the examining finger or hand of the physician, who in the course of his daily work may have touched the dried sputum of diphtheria, the desquamated skin of scarlet fever, suppurating wounds, erysipelatous surfaces, and other virulent, infectious material; so that at any time his hands may fairly reek with the most dangerous poisons that could possibly be brought in contact with the parturient and puerperal woman. Many hundred cases have been traced directly to the association of the physician with infectious diseases, and there is scarcely a surer way of avoiding puerperal infection than by abstention from vaginal examinations. Epidemics of puerperal fever in hospitals have been quickly stamped out by avoiding all internal examinations, and the best morbidity and mortality records ever known have been obtained

recently in institutions in which vaginal examinations were eliminated as much as possible. The hands of the nurse or other attendants may be the agents that deposit bacteria in the vagina or upon the vulvar orifice. The implements used in and about the parturient canal, an atmosphere laden with dust or vitiated by foul hygienic conditions, and the water used to wash and douche the patient may each and all carry disease-germs to the parturient woman and may introduce them into the genital canal. The bedclothing, the personal clothing, the mattress, the vulvar pads, the material used to cleanse the vulva (rags, sponges, cotton, cloths) may each and all be sources of infection.

Putrescible material retained within the genital canal (especially within the uterine cavity) will attract the innumerable and ubiquitous saprophytes and their spores with which the purest atmosphere swarms. The development of these bodies in a situation most favorable to their growth and active propagation may easily result in a toxemia, if not in actual invasion of the body by pathogenic germs.

Finally, a certain proportion of cases may be traced to auto-infection,—that is, to pathogenic germs resident in the body and not introduced from without during or after labor. These germs may have had a lodgement in the vagina, as has been demonstrated in the bacteriological studies of that canal recently made, or they may have been contained in a limited area near the genital canal, as in an old pyosalpinx, whence they spread by rupture of the pus-sac during labor, or are incited to new activity by the compression and consequent reduction of vitality of surrounding tissue. Or there may be in the neighborhood of the womb tumors of low vitality and highly putrescible material, which, being reduced in resisting power by compression from the descending child, become infected by germs that ordinarily cannot influence vigorous body cells. Dermoid cysts and fibroid tumors are the best examples of these growths.

It is claimed that even highly vitalized tissues like the pelvic muscles, especially the ilio-psoas, may be so pinched and injured by the child's head that they slough and become gangrenous. The iliac bone, too, has become carious after the bruising to which it was subjected in a prolonged forceps operation.

The parturient woman may have been before conception the subject of an interstitial endometritis caused by the presence in the endometrium of some pathogenic germ. This germ being lodged in the interstices of the uterine mucous membrane and the woman becoming pregnant, there is contained in the uterine cavity even before labor an efficient cause, perhaps, of virulent puerperal sepsis after

delivery. Cases in which infection followed childbirth in this way have been recently reported by Gottschalk and Immerwahr.[1]

The Behavior of Pathogenic Micro Organisms when introduced into the Genital Canal or Deposited upon its Entrance.—The consequences of microbic invasion of the genital canal by pyogenic germs are variable in the extreme. If the bacteria enter wounds in or near the vaginal outlet the result may be the same as in the infection of any wound in general surgery,—that is to say, local inflammation, suppuration, and, perhaps, general systemic infection, but the infectious inflammation of a vaginal wound is almost certain to spread upward, for the conditions are more favorable to microbic growth and to systemic invasion in the uterine cavity and in the tubal canals than in the lower portion of the genital tract. Hence it is that the vast majority of serious puerperal infections have their effective starting-point within the womb. For example, it has been found in a streptococcus infection of the whole genital tract that the micro-organisms were present in the vaginal mucous membrane alone, in the cervical mucous membrane, and in the tissues immediately subjacent; in the endometrium and deep within the uterine muscle, showing that they could easily penetrate the deeper tissues within the womb while they were incapable of invading the tissues underlying the vaginal mucous membrane. In other words, the resisting power of the tissues under the mucous membrane is less the higher the micro-organisms are found in the genital canal.[2]

Septic infection of the genital tract results often in the formation of false membranes. This is true of pure streptococcus infections, of mixed infections (streptococcus, bacillus fetidus, bacillus pyocyaneus, the pyogenic staphylococci) and especially true, of course, of those rare cases of true diphtheria of the genital tract in which the Klebs-Löffler bacillus is found.

The apparent false membrane in a septic endometritis may be due to a necrosis of the endometrium, clothing the uterine walls with a dirty greenish-yellow covering. There is much yet to learn of the antagonisms and associations of pathogenic germs in puerperal infections. This much, however, may be asserted with confidence: the streptococcus is frequently associated with the pyogenic staphylococci, the bacillus fetidus, the bacillus pyocyaneus, and the colon bacillus, though it is said to drive away or destroy the staphylococci after a time. These mixed infections are, in my experience, the most fatal.

[1] Ueber die im weiblichen Genitalcanale vorkommenden Bakterien in ihrer Beziehung zur Endometritis, Archiv für Gynäkologie, Band L, Heft 3.

[2] Lahn, Inaugural Dissertation, Jahresbericht, 1894.

The gonococcus seems often to prepare the way for the streptococcus, which, in its turn, may destroy the gonococcus, conquering the latter in a struggle for existence and remaining in sole possession of the field. The streptococcus appears often to prepare the way for the colon bacillus, which certainly wanders in frequently in the course of streptococcus infection.

Streptococci, staphylococci, and the pyogenic bacilli have pre-eminently the power to penetrate the tissues of the womb and to distribute themselves throughout the body. This is particularly true of the streptococci.

Gonococci and the colon bacilli confine themselves most often to the endometrium. The former is the pathogenic agent in a large proportion of the cases of septic endometritis after labor. Both of these organisms, however, can penetrate the uterine muscle, and may be distributed by the lymph-channels or by the blood-vessels throughout the system. The putrefactive micro-organisms (saprophytes) are themselves anaërobic, and confine their activity mainly to the decomposition of the endometrium and of putrescible uterine contents, particularly an hypertrophied endometrium, which is practically cut off from its blood-supply by the contraction of the womb, and which is peculiarly liable to rapid decomposition. During the process of the putrefaction the saprophytes manufacture soluble and absorbable products (ptomaines) of a highly pathogenic nature, causing in many a case a fatal intoxication without actual microbic invasion of the body. Moreover, these same saprophytes occasionally attack blood-clots in the uterine sinuses, and may in them, by detachment of a thrombus, be swept into the general circulation, and be deposited as a septic embolus in different portions of the body causing metastatic abscesses.

Rheumatic Phlebitis.

Gatay reports that during the course of a case of subacute rheumatism of light degree there occurred a phlebitis of the right axillary vein with consecutive thrombosis of the axillary, subclavian, internal jugular, and innominate veins. The histological examination revealed inflammation of all the coats of the veins and periphlebitis. The bacteriological examination was negative. A reference to the ten other cases in the literature shows rheumatic phlebitis to most commonly affect the veins of the lower extremities, and usually manifest itself as phlegmasia alba dolens.—*Centralblatt für innere Medicin.*

TUBAL PREGNANCY.[1]

By Charles B. Penrose, M.D., Ph.D.,
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Gentlemen,—Tubal pregnancy occurs when a fecundated ovum is developed in the Fallopian tube.

Fecundation may take place in the Fallopian tube, because spermatozoa may pass through the uterus and the tube into the pelvic cavity, but unless something occurs to arrest the passage of the fertilized ovum into the uterus a normal uterine pregnancy will result. It is said by Webster that predisposition to tubal pregnancy is due to a "developmental fault whereby there is reversion either of structure or reaction tendency in the tubal mucosa to an earlier type in mammalian evolution."

In other words, decidual changes following the fertilization of the ovum may in some women occur in the mucous membrane of the Fallopian tubes, as well as in that of the uterus. If this condition is present in any case and at the same time something occurs to impede the passage of the ovum into the uterus, a tubal pregnancy may take place.

Interference with the passage of the ovum along the tube has been attributed to a variety of causes. Chronic salpingitis is a frequent cause. It destroys the cilia of the epithelial cells of the tubal mucosa. It produces thickening of the tubal walls, and causes peritoneal adhesions, which impede the normal peristaltic action of the tube.

Obstruction to the passage of the ovum may also be caused by a polyp or tumor of the tube; tumors external to the tube which press upon it; displacement and hernia of the tube; diverticula of the tube; abnormal foldings of the tubal wall. Tubal pregnancy has occurred in tubes in which no lesions whatever could be discovered by the most careful examination.

It seems probable that all pregnancies which occur outside of the uterus originate in the Fallopian tube.

Pregnancy may occur in any part of the tube from the abdominal ostium to the uterus.

Tubal pregnancy is said to be infundibular when gestation begins in the infundibulum or in an accessory tube-ending. This variety has also been called tubo-ovarian because in time the gestation-sac

[1] Lecture delivered at the University of Pennsylvania.

may become adherent to the ovary, and be bounded by both tube and ovary.

The pregnancy is said to be ampullar when gestation begins in the ampulla of the tube. This is the most usual seat of tubal pregnancy. It is called interstitial when gestation begins in the interstitial portion, or that part of the tube which is in immediate relationship with the uterus.

Changes in the Fallopian Tube.—During the early stages of tubal pregnancy—the first two or three months—it seems probable that a certain amount of hypertrophy and hyperplasia of the muscular wall of the tube takes place. The general form of the tube is spindle-shaped. There is a marked increase in the vascularity of the tube, which is most pronounced in the neighborhood of the ovum. The whole tube becomes turgid and swollen. The peritoneal margin or ring surrounding the ostium abdominale becomes prominent, and gradually, as has already been described under salpingitis, projects beyond the fimbria, contracts, and ultimately hermetically closes the ostium.

Inflammation of the peritoneal covering of the tube may be present. Such inflammation may have preceded the tubal pregnancy. It produces various tubal adhesions and distortions and may still more firmly close the abdominal ostium. The changes which take place in the mucous membrane of the tube and in the developing ovum are similar to those which occur in the uterus in a normal pregnancy.

A variety of terminations occur in tubal pregnancy.

(1) In very exceptional cases the pregnancy may continue until full term without rupture of the tube taking place.

(2) The tube may rupture; this is by far the most usual occurrence. The rupture may take place into the broad ligament, into the peritoneal cavity, or, in the case of interstitial tubal pregnancy, into the uterus.

(3) Tubal abortion may occur; the ovum being discharged through the abdominal ostium into the peritoneal cavity.

(4) The ovum may be destroyed in the tube and gestation stopped before rupture takes place.

Rupture of the tube is the rule in tubal pregnancy. The time of rupture depends upon the position of the ovum in the tube. It occurs somewhat later in the interstitial variety than in that which is situated in the free portion of the tube. Rupture commonly occurs in interstitial pregnancy before the fifth month. In the other forms of tubal pregnancy it occurs most usually before the end of the third

month. In the latter class of cases the greatest number of ruptures occur during the second month.

Rupture is caused by the gradual thinning from distention of the tube. Rupture may take place suddenly, a large hole, through which the ovum escapes, being produced; or the rupture and discharge of the ovum may take place gradually without causing any acute symptoms.

When the rupture takes place between the layers of the broad ligament the hemorrhage is usually not very profuse, as it is controlled by pressure of the structures which surround the blood. A broad ligament hematoma is formed.

The ovum may be destroyed as a result of the rupture, and no further lesions due to the development of gestation will arise. The hematoma with the ovum may in time be absorbed; or suppuration may occur with the production of a pelvic abscess; or mummification, adipocea or lithopedion formation may take place in the fetus.

If the ovum is not destroyed by the rupture, it may continue to develop in the cavity formed by the tube and the broad ligament. The placenta may remain attached to the inner surface of the tube, or it may contract adventitious attachments to any of the surrounding structures—the surface of the uterus or the pelvic floor. The cavity occupied by the ovum may continue to enlarge by the pushing aside of pelvic and abdominal organs until full term is reached and spurious labor comes on.

In some cases a secondary rupture of the gestation-sac occurs, and the fetus is discharged into the peritoneal cavity.

When rupture of the tube into the peritoneal cavity occurs, the danger from hemorrhage is very great. The majority of women die within forty-eight hours after this accident unless relieved by immediate laparotomy. There is no surrounding pressure to control the hemorrhage as in the case of rupture into the broad ligament. Sometimes the escaping ovum plugs the rent in the tube and bleeding is checked in this way.

If the woman survive the effects of hemorrhage she may die from peritonitis or from suppuration of the hematocele in the peritoneal cavity.

In exceptional cases, if the pregnancy be early, the blood and the ovum may be absorbed by the peritoneum, and spontaneous recovery occurs.

If the woman is not destroyed by the first effects of the rupture, the fetus surrounded by its membranes may escape into the peritoneal cavity, while the placenta remains attached to the tube, and gestation may continue. It is very doubtful whether the fetus will con-

tinue to live if it escapes into the peritoneum free of the membranes. There is no evidence that an early ovum may escape into the cavity of the abdomen and develop on the peritoneum.

If the fetus does not survive, it may be absorbed by the peritoneum, or mummification, adipocea, or lithopedion formation may occur.

Tubal abortion means the separation of the ovum from the tube wall, and its partial or complete discharge through the ostium abdominale into the peritoneal cavity. The accident is accompanied by hemorrhage into the tube, and thence into the peritoneal cavity. Tubal abortion is most likely to occur during the early weeks of pregnancy (the first and the second months), before the abdominal ostium has become closed.

It is probable that tubal abortion is much more frequent than is often supposed. According to Sutton it is probably the cause of the peritoneal hematocele in many cases where the bleeding had been attributed to other origin, as reflux of menstrual blood from the uterus and simple hemorrhage from the tube.

In tubal abortion the loss of blood into the peritoneum may be so great that the woman is destroyed.

In other cases death results from peritonitis and suppuration of the hematocele. And, finally, in a good many cases the blood and ovum may be absorbed and recovery takes place. Sometimes at operation the ovum is found in the peritoneal cavity without any blood. The blood had either been small in amount and quickly absorbed or there had been no escape into the peritoneum. Blood-clot is usually found in the Fallopian tube after tubal abortion. The ostium may become closed and a hematosalpinx may result.

When the ovum is destroyed in the tube before rupture takes place, the fetus and blood may be absorbed, or mummification may result, or suppuration may occur with the formation of pyosalpinx; or if death of the fetus happens in the early weeks the tube may be found closed at the ostium abdominale and filled with blood in which no fetus may be detected. Such cases have been repeatedly described as hematosalpinx, the real origin of the condition in pregnancy not being known. The fetus has been absorbed or broken up and scattered through the blood mass. Careful microscopical examination of the tube reveals the true condition,—a destroyed tubal pregnancy with hemorrhage into the tube. As has already been said, hematosalpinx not caused by tubal pregnancy is very rare.

Coincidently with the development of the tubal pregnancy there occur enlargement of the body of the uterus and decidual transformation of the endometrium.

The enlargement of the uterus varies a great deal, according to the position of the tubal pregnancy and the course of its development. The interstitial variety is accompanied by the greatest uterine enlargement. When the tubal gestation has reached full time the uterus may measure from four to seven and a half inches in length.

The uterus also becomes softer in tubal pregnancy, and the cervix softens somewhat, though not so much as in a uterine pregnancy.

If the woman and the fetus survive the many dangers which accompany the progress of tubal gestation; the development of the fetus will progress to full term, and then the phenomenon of spurious labor will come on.

In spurious labor there are a series of periodical pains which resemble those of normal labor. The pains may last from a few hours to several days. They may cease and reappear after varying intervals.

Hemorrhage usually takes place from the uterus. After the spurious labor the uterine discharge may be of the same character seen after normal labor.

It is probable that the fetus always dies after spurious labor. The liquor amnii is absorbed; the gestation-sac shrinks; and changes take place in the fetus, such as have already been referred to. It may become mummified or converted into adipocea or lithopedion. In this condition it may remain in the abdomen for many years. A mummified fetus which had been carried for fifty years has been removed *post mortem* from a woman of 82.

Rarely after spurious labor the gestation-sac ruptures and the fetus has been discharged into the peritoneum, into the vagina, and into the large intestine, whence it has been borne through the anus.

The symptoms of tubal pregnancy are in some cases similar in all respects to those of normal uterine pregnancy. In extremely rare cases the woman has reached full term in ignorance of any unusual condition. Usually, however, the early occurrence of some of the accidents of tubal gestation attracts her attention. Before such accidents or complications arise there are most frequently no subjective symptoms to excite any suspicion of the peculiar form of pregnancy. Changes in the skin, in the nipples, in the nervous and circulatory systems, and in the gastro-intestinal tract may resemble those of normal pregnancy, and are subject to the same variations.

Mammary changes accompanied by the secretion of milk occur in tubal pregnancy. These changes are, however, less pronounced

than in uterine gestation. The vagina may undergo changes similar to those of normal pregnancy. It becomes soft, relaxed, and altered in color, and pulsation of vessels may be felt in the walls.

It should always be remembered, however, that tubal pregnancy may occur without the presence of any of the signs of pregnancy. Women in perfect health, thoughtless of pregnancy, have died of acute hemorrhage from a ruptured tubal gestation,—the first symptom of the condition.

Menstruation.—The changes in menstruation vary a great deal. Menstruation usually ceases when tubal pregnancy begins, though not with the same regularity as in normal pregnancy.

Sometimes menstruation continues for a few months and then ceases. In other cases menstruation is arrested for the first few months, and occurs with greater or less regularity during the latter months of the pregnancy. There may be irregular discharge of blood throughout the whole course of gestation.

In the blood discharged from the uterus pieces of decidual tissue of various sizes are often found. Sometimes the whole decidual membrane of the uterus may be expelled in one mass. In any suspected case the blood should always be carefully examined for such decidual membrane. All shreds of tissue should be submitted to careful microscopical examination. The woman should be questioned in regard to the passage of such tissue before she came under medical supervision.

The woman often complains of periodical pains occurring in the hypogastrium and in the pregnant tube. They usually appear after the second month, though they may begin earlier. These pains are thought to be caused by the contractions of the uterus and the gestation-sac.

The abdominal enlargement in extra-uterine pregnancy differs in several respects from that of normal pregnancy. It is usually most marked on one side of the abdomen, especially during the first five or six months.

Towards the end of gestation the enlargement becomes more symmetrical in the abdomen and resembles closely that of normal pregnancy.

In tubal gestation, on account of the higher position of the tube, bulging of the abdominal wall is likely to appear somewhat earlier than in normal pregnancy. The abdominal enlargement in tubal pregnancy does not follow the same uniform progress which is characteristic of uterine pregnancy.

Fetal movements take place and fetal heart-sounds are heard as in normal pregnancy.

Bimanual examination made before rupture of the tube will reveal the tubal enlargement; the shape of the tube depending, of course, upon the position of the tubal pregnancy. The tubal enlargement is said by Veit to have a characteristic soft feel distinct from the hard or fluctuating enlargements of other forms of tubal disease.

After rupture the distinct tubal tumor disappears, and the examiner feels a mass lying to one side or behind the uterus. The enlarged tube may be felt merged in this mass.

If pregnancy continues after rupture, the fetal movements may in time be felt and *ballottement* may be obtained. The cervix is found to be somewhat softened; the os may be patulous; the uterus soft and enlarged. The uterine enlargement, however, is not of the same rounded shape of the pregnant uterus, and the size is much less than that of corresponding periods of normal pregnancy.

It is of great importance to study the symptoms of the accidents of tubal pregnancy. As has already been said, it is usually the accident of rupture which first directs the woman's attention to the abnormal condition.

The symptoms depend upon the seat of rupture; rupture of the tube into the broad ligament is a much less serious accident than rupture into the peritoneal cavity.

If the rupture into the broad ligament is sudden the woman complains of sudden acute pain in the affected side. The pain may extend to the back and throughout the pelvis. The intensity and the extent of the pain depend on the amount of blood which escapes. Sometimes only a small hematoma is found in the broad ligament; at other times the blood burrows around the rectum and symptoms of pressure may arise. Difficult defecation may follow. Retention of urine may occur.

The woman suffers from shock and may become somewhat anemic.

Bimanual examination reveals the condition. The broad ligament will be found filled with a tense mass which bulges into the vagina. The uterus is pushed to one side. The mass may extend behind the uterus and surround the rectum. The upper outlines felt by the abdominal hand are ill defined.

The loss of blood from simple rupture into the broad ligament is not often sufficient to cause death. The fetus may continue to develop, however, and secondary rupture into the peritoneal cavity may occur.

Rupture of the tube or the gestation-sac into the peritoneal cavity is a very fatal occurrence. In the majority of cases death from hemorrhage occurs within twenty-four or forty-eight hours.

Unless the ovum plugs the rent in the tube there is nothing to arrest the hemorrhage.

The woman is seized with sudden pain in the side, which she often describes as the sensation of "something giving away." She suffers from faintness, acute anemia, nausea, vomiting, and collapse. As in other cases of acute anemia there may be delirium and convulsions.

Bimanual examination made after intraperitoneal rupture reveals an indefinite fulness or yielding mass in the pelvis behind the uterus. The blood free in the peritoneal cavity coagulates slowly and the fluid blood or soft unrestrained clots are often very difficult to palpate. For this reason at first the examiner can feel only an ill-defined fulness in the pelvis. If the woman survive and the mass of blood becomes more solid, it may be then distinctly palpated as a solid mass behind the uterus, bulging into the vagina and extending up into the abdomen. Though the hematocele may be difficult to define at first, yet the enlarged tube may usually be palpated, and the ovum may be felt in the midst of the ill-defined mass of blood.

As has already been said, in rare cases rupture may occur intraperitoneally or into the broad ligament without producing any of the severe symptoms just described. The fetus continues to develop, and the woman will be ignorant that rupture has ever taken place. Between the two extremes there are all degrees of severity.

In tubal abortion the symptoms resemble those of intraperitoneal rupture. If the fetus dies within the tube, the symptoms become those of hematosalpinx or other form of tubal disease.

Diagnosis.—The diagnosis of tubal pregnancy is not often made before rupture, because there are usually no symptoms which direct the woman's attention to the abnormality of her condition. Very often she thinks that she is normally pregnant.

If opportunity is given for examination before rupture the diagnosis may be made. The woman presents the signs of pregnancy. The uterus may be slightly enlarged, though not of the size or shape normal for the stage of pregnancy. There is a soft, tubal tumor.

Immediately after rupture the diagnosis of the condition must be made from a study of the previous history, the present subjective symptoms, and the bimanual examination.

If a woman who had thought herself pregnant is suddenly seized with pain in the side followed by anemia and shock, the suspicion of extra-uterine pregnancy should be aroused. If bimanual examination reveals the hematoma or hematocele in the pelvis with tubal enlargement the diagnosis may be made. Pelvic hematoma and hematocele are in nearly all cases caused by tubal pregnancy.

If the woman survive the rupture and the fetus continue to develop, the diagnosis becomes easier the more advanced is the case.

It must be remembered that amenorrhea is not as general in tubal as in uterine pregnancy. The woman often gives the history of irregular bleeding, or of arrest for a few periods, and then recurrence of menstruation. Such experience may lead her to seek medical advice even before rupture.

The intermitting attacks of pain which are sometimes felt in the affected tube may also cause her to seek medical advice.

A history of the discharge of membrane or shreds of membrane is of great value. If opportunity is afforded for examination of such shreds and decidual cells are found, and uterine pregnancy may be excluded, there is very strong evidence that any mass in the pelvis is an extra-uterine gestation.

It has been advised to curette the uterus for diagnosis in order to determine the decidual character of the lining membrane. This is good advice if the operation is performed with great care, if we can with certainty exclude the possibility of uterine pregnancy. If followed indiscriminately numbers of abortions would be produced. Uterine pregnancy has often been mistaken for tubal pregnancy. The mistake is likely to occur when the fundus is drawn to one side or is retroflexed. And uterine pregnancy may occur with tubal enlargement from some other cause than tubal pregnancy. In conclusion, the diagnosis of tubal pregnancy, before the presence of a fetus can be ascertained, is based on the following considerations:

The symptoms of pregnancy; a tubal or pelvic tumor; a slightly enlarged though not pregnant uterus; discharge of decidual tissue from the uterus; the history of the woman pointing to menstrual irregularity; uterine discharge of shreds; history of previous tubal rupture.

Treatment.—The treatment of tubal pregnancy is operative. It may be considered under the following heads:

(1) Before primary rupture.

(2) At the time of rupture.

(3) After rupture.

Before Primary Rupture.—If the physician is so fortunate as to recognize a tubal pregnancy before primary rupture, he should, without delay, remove the affected tube and contained ovum. The operation is simple and is attended by no more danger than that which accompanies an ordinary salpingo-oöphorectomy. And the woman is saved the imminent dangers associated with a developing tubal pregnancy. There are no circumstances under which it is proper to follow an expectant treatment.

Most of the cases of unruptured tubal pregnancy which have been operated upon had not been recognized until the abdomen had been opened. The operation was performed under the diagnosis of pyosalpinx, hematosalpinx, or some other tubal disease. The cases show the value of the general rule to operate for all gross disease of the tubes without delay.

At the Time of Rupture.—Many cases of tubal pregnancy are first seen at the time of rupture. In such cases celiotomy should be performed without delay. The condition is most urgent in intraperitoneal rupture; but it is the safest rule to operate immediately whether the rupture be intra- or extraperitoneal. It is unwise to wait for reaction. The physical depression in such cases is due more to hemorrhage than to shock, and it is in accord with general surgical principles to arrest hemorrhage at once.

Rupture usually takes place before the twelfth week and the whole product of conception, and the tube may readily be removed. Hemorrhage usually ceases as soon as the proximal and distal ends of the ovarian artery are ligated. The ligatures may be placed about the ovarian artery at the pelvic wall and at the uterine cornua as the first steps of the operation, before any attempt is made to remove the mass. It may be necessary to close the rent in the broad ligament by a second series of ruptures.

After Rupture.—If the woman survive and is first seen after primary rupture one of two conditions will be present,—a destroyed or a developing extra-uterine pregnancy. If the fetus has died and gestation has ceased the woman is exposed to the various dangers which attend the presence of such a foreign body in the abdomen. If the fetus has died during the earlier months it may be absorbed and spontaneous cure take place. And even the dead, full-term fetus has been carried in the abdomen for years without producing a fatal result to the mother. It seems safest, however, in all such cases to operate as soon as the condition is recognized. The rules of abdominal and pelvic surgery apply to such cases. The placenta of a dead fetus may be removed without fear of uncontrollable hemorrhage.

If the woman is seen after primary rupture, with a developing gestation, the case presents much more serious dangers. These dangers lie in the placenta. If the pregnancy has not advanced beyond the fourth month it is usually possible to remove the whole of the gestation-sac, the embryo, and the placenta without uncontrollable hemorrhage. The ovarian and, if necessary, the uterine arteries may be ligated and the placenta may be removed in one mass. The cavity of the broad ligament may be obliterated by buried sutures.

If the gestation has advanced beyond this stage it is often im-

possible to remove the placenta without fatal hemorrhage. Many women have bled to death from the attempt. The operator sometimes incises the placenta as he enters the gestation-sac and is obliged to proceed with its removal. In other cases he starts to remove it and finds too late that the hemorrhage is beyond his control. In the advanced months of pregnancy the sac and placenta may become adherent to any of the abdominal or pelvic viscera and the large vessels. Hemorrhage cannot be controlled as in the earlier months by ligation of the ovarian and uterine arteries. The result in these cases is determined by the ability of the operator. A full-term living child, the whole sac, and the placenta have been successfully removed. If the attachments are such that the surgeon considers it unsafe to attempt the removal of the sac and placenta the sac should be incised, the fetus should be removed, the cord being divided between ligatures; the sac should be sutured to the abdominal incision; the cord should be drawn through the opening, and the sac packed with gauze. At the end of four or five days the gauze pack may be removed, under anesthesia, if necessary, and the placenta may be taken away. There is very much less risk of hemorrhage after the lapse of a few days. Some operators prefer to allow the placenta to come away spontaneously. This is sometimes necessary.

It will be seen from this discussion that the treatment of all varieties of ectopic gestation is operative, and that the sooner the operation is performed the better for the patient. Consideration for the life of the child should have no influence in determining the time of operation.

A BRIEF STUDY OF THE OPHTHALMIC CONDITIONS IN A CASE OF CEREBELLAR TUMOR; AUTOPSY.[1]

By Charles A. Oliver, A.M., M.D.,

Philadelphia,

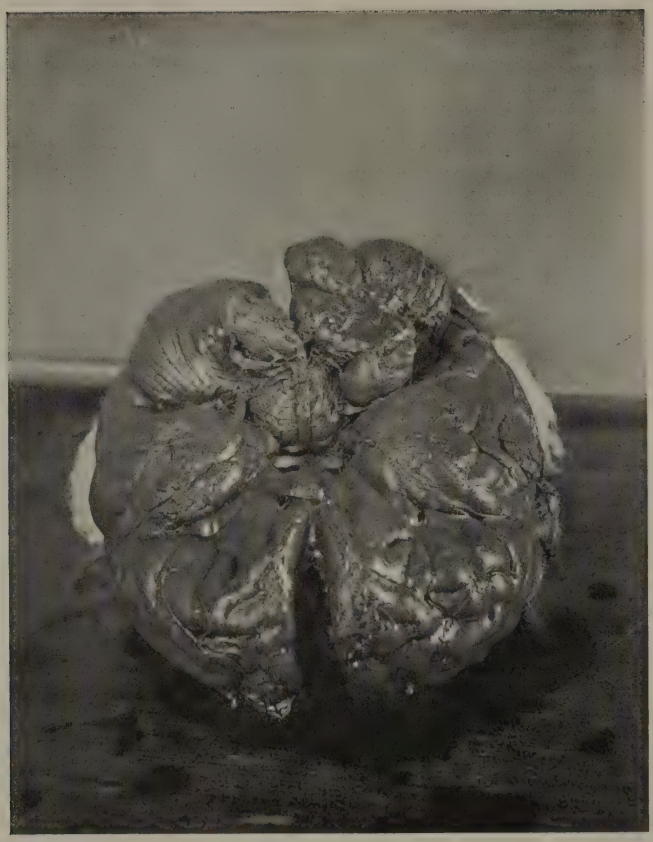
One of the Attending Surgeons to the Wills Eye Hospital; one of the Ophthalmic Surgeons to the Philadelphia Hospital, etc.

On February 20 of the present year, through the kindness of one of my colleagues at the Philadelphia Hospital, Dr. J. Hendrie Lloyd, I had the privilege of examining the ocular conditions of A. L., a

[1] Paper read before the 1896 meeting of the American Ophthalmological Society.

An extended report of the case from a neurological stand-point, by Dr. Lloyd, appeared in September, 1896, number of the American Journal of the Medical Sciences. The notes of the general conditions here given have, through the kindness of Dr. Lloyd, been abstracted from the manuscript of his paper.

Ophthalmoscopic appearance of left eye ground.



Base of brain, showing location of tumor.

38-year-old married man, a brass-polisher by occupation, who, bedridden in the nervous wards of the hospital, was suffering from undoubted cerebellar symptoms dependent upon a probable new growth.

There was a history of severe traumatism in the right occipital region seven years previously, this being followed by frequently recurrent and violent head pains, which were especially marked in the occiput. In the latter part of December, 1895, the cephalalgia became lancinating, his vision began to fail, and vertiginous attacks, but one of which was associated with gastric disturbance, appeared.

The patient, who was confessedly a syphilitic, could not give any family history of a relevant nature.

In the early part of February, 1896, when he was first admitted to the hospital wards, he was noticed to have both the gait and attitude that are typical of cerebellar disease. In addition, the head and the trunk were forcedly turned to the right side, this being increased when attempts were made to walk. Speech was hesitating and cerebration was slow. Anesthesia, hemiplegia, and paraplegia were all absent. The patellar-tendon reflexes were exaggerated, and there was a slight ankle clonus, which was rather excessive on the left side. Physical exploration failed to reveal any evidences of cardiac, pulmonary, or renal complication. The patient claimed that he had become almost blind, his pupils being markedly dilated.

When I first saw him, some three weeks after his admission to the hospital, the general condition was about the same as above given.

At this time I made as exhaustive and as careful an ophthalmic examination as I could under the circumstances.

The pupil of the right eye was five by six millimetres in size, with its long axis at 45 degrees. The media were clear. There was a marked choked disk, the extreme summit of which was situated down and in, and extended forward into the vitreous to six diopters height from a two-diopter fundus. The retina in the vicinity of the disk was swollen. The retinal veins were small and carried dark blood. The retinal arteries were very much reduced in size. The nerve swelling appeared solid, white, and compact, and stood out in prominent contrast with the swollen retina. Between the macula and the disk and beneath the macula there were a few points of commencing degeneration.

The pupil of the left eye was the same as that of the fellow eye except that its long axis was at 100 degrees. The media were clear. There was a similar choking of the disk, the summit of the nerve head extending seven diopters into the vitreous from a two-diopter level of the undisturbed portions of the fundus. The disk was diffusely swollen, its edges not being anywhere visible. The retinal veins were

reduced in size except at the summit of the disk, at which place they were engorged with dark-colored blood. In this position the lower temporal vein curved directly into the swollen tissues, and was surrounded by a congeries of fine swollen capillaries and minute capillary hemorrhages, distributed through which there were a number of brilliant crystalline masses. The retinal swelling was more extensive than it was in the other eye, and gradually shelved downward to the normal retinal plane far out in the periphery of the fundus. (See phototype of ophthalmoscopic appearance.)

Vision in the right eye seemed to be absolutely lost, whilst that of the left eye was reduced to the ability to see strong light-stimulus in a contracted and flattened field embracing the fixation-point.

Careful examination of the irides showed that with the exception of a slight response of the left iris to very strong light-stimulus, there was no reaction directly or consensually to light, accommodation, and convergence. The eyeballs were freely mobile in all directions, though, when fixation was carried outwardly either to the extreme right or to the extreme left, a series of horizontal oscillatory movements that continued as long as the effort at fixation could be maintained, were constantly induced.

The symptoms remained unchanged until about a week later, when several slight attacks of vomiting appeared and urinary incontinence, possibly mostly the result of deficient cerebration, ensued.

The mental stupor increased, the head pains persisted, and mentation seemed somewhat disturbed. These symptoms became progressively worse, until one month later, pulmonic edema put an end to his life.

The post-mortem examination failed to evidence any disturbance of the trunkal viscera, except a slight interstitial nephritis with the appearance of a few small cysts upon the surface of the right kidney.

The calvarium was of its ordinary thickness, and there was a rather superficial exostosis in the external table of the occipital bone. The cerebral meninges were normal. Beneath the under surface of the cerebellum there was an oblong tumor about five and a half centimetres in length and two and a half centimetres in breadth at its widest part. As can be seen in the accompanying reproduction, made from a photograph taken by Dr. C. Y. White, one of my resident surgeons at the hospital, the growth sprang from the under and external surface of the middle cerebellar peduncle and projected outwardly between the pons varolii, the medulla oblongata, and the right cerebellar lobe. The posterior portion of the neoplasm had become cystic. Across its projecting and solid surface several stretched and atrophied nerve-trunk strands coursed their way.

The inferior surface of the corresponding cerebellar lobe was excavated, and in the excavation there was a membranous cyst. The fourth ventricle was patulous and undisturbed.

The corpora striata and the optic thalami, as far as studied, were normal.

The spinal cord, which was edematous, gave evidences of degeneration of its lateral columns.

The tumor itself was a gliosarcoma that was undergoing cystic degeneration.

Remarks.—This case, the type of which is repeated in fully one-fourth of the total number of intracranial neoplasm, is of interest, not only upon account of the usual history of trauma and the characteristic general symptoms of cephalalgia, mostly in the region of the occiput, the vertigo, the ataxic gait, with exaggerated patellar-tendon reflex, the tonic convulsive movement of the head and trunk to the right, and the manner of death, but is of diagnostic importance when the ocular symptoms are considered alone.

Here the high grade of optic neuritis, its character and its inequality with the associated relative disturbance of vision; the almost absolute blindness which I have so often noticed as typical of subtentorial pressure; the shape and position of the field remnant in the left eye; the nearly total interior ophthalmoplegia which was more marked on the right side; and the series of horizontal nystagmic movements, all make an ocular picture that is eminently of value in the determination of the situation of intracranial growths.

A JACK-STONE IN THE ESOPHAGUS LOCATED BY THE FLUOROSCOPE, AND REMOVED AFTER PERFORMING GASTROTOMY.

By Alfred C. Wood, M.D.,

Philadelphia,

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The following case, although almost identical with the one described in the June number of the Magazine, is reported chiefly because it is a further demonstration of the facility with which certain foreign bodies, inaccessible by ordinary means, may be removed by the method adopted by Dr. White in the case referred to.

Elsie W., aged 3 years, while playing with jack-stones on August 8, was observed to be choking, from which she had become "blue" in

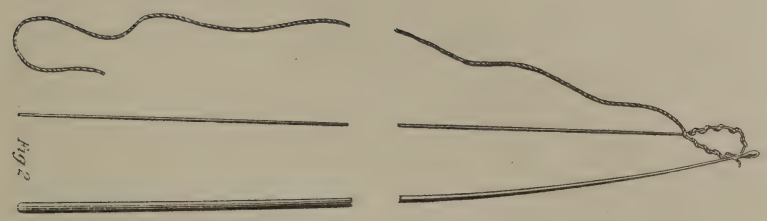
the face. Her mother came to her assistance, and on introducing a finger in the child's mouth felt a jack-stone, which was accidentally pushed farther down in an effort to extract it. Dr. McCraig was called in, and, after making an examination and finding that the jack-stone had passed beyond reach, advised the parents to take the child to the University Hospital.

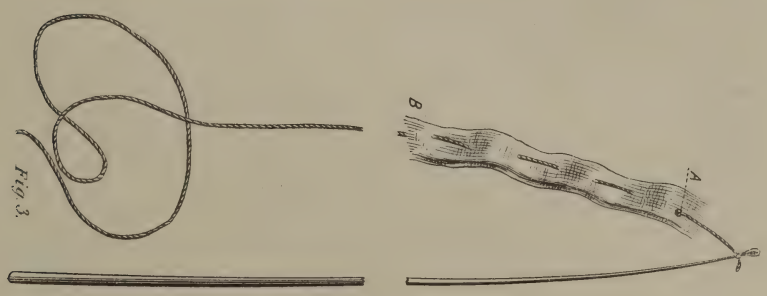
She was admitted on the afternoon of August 12. At this time her temperature was 102.4° F., pulse 130, and respiration 30. She had been unable to swallow any solid food after the accident, and she was beginning to refuse liquids, which she took at first, but with some difficulty. Although the history seemed definite, the positive information obtained by means of the skiagraph in the first case made it desirable to have the additional evidence only to be obtained by this means in the present instance. Unfortunately, the only apparatus available at the time required an exposure of half an hour, and as the child was frightened and unmanageable, the idea of obtaining a skiagraph was reluctantly abandoned. Happily, another resource was available. By means of the fluoroscope, the observer could plainly see the foreign body in question. The outlines were distinct and the position was the same as that shown in the plate facing page 710, in the June number of the MAGAZINE. The appearance to the eye was, of course, exactly similar to that seen in the skiagraph. With this information, and the knowledge of the fatality of such bodies in the esophagus, I had no hesitation in preparing to remove the jack-stone as soon as possible, which was done on the following day.

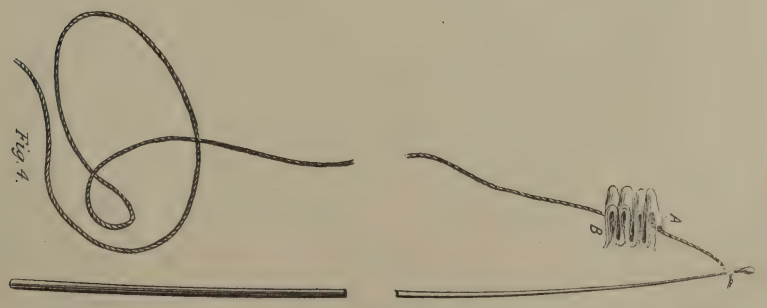
The opportunity afforded me of assisting Dr. White in a similar case was of great benefit in selecting from the various methods recommended for the removal of foreign bodies in the esophagus. I had learned, first, the absolute futility of an attempt to extract an object at such a depth by any of the various esophageal forceps; and, second, that esophagotomy was impracticable for the reasons given by Dr. White in the report of his case. As was also mentioned in this paper, propulsion was not to be considered.

Two simple plans which seemed worthy of trial suggested themselves. In order to carry out the first of these, Dr. Schleif, the house-surgeon, constructed the apparatus shown in Fig. 2. It consisted of a silk and silver-wire loop attached to a whale-bone guide. The object of the silver wire was to make the loop stand open, while the silk gave the necessary strength to extract the jack-stone if one of the projections was fortunately caught in the loop. Several unsuccessful attempts were made to pass the instrument, but the effort had to be abandoned as the loop was obstinately arrested by the jack-stone. I next folded four layers of gauze, three-fourths of an inch wide and

four inches long, back and forth on the long axis so that several thicknesses three-quarters of an inch square resulted. A heavy silk thread was passed through the centre of this pad and fastened to the distal end, which in turn was to be fastened to the end of the whale-







bone guide. (Fig. 3.) The object was to pass the gauze beyond the jack-stone while the full length was extended, when, by drawing on the silk thread, it was hoped that the proximal end of the gauze strip (*B*, Fig. 3) would catch in the projections, and doubling upon itself (see

Fig. 4) would bring the foreign body out in advance of it. This failed also to pass the object. It would seem, however, that in a more mature person either of these might occasionally prove successful. In the present case the small calibre of the esophagus of the child and the short and thick prongs of the jack-stone made it quite impossible to pass more than the most slender object. Considerable time was devoted to these attempts, however, in the hope of avoiding a formal gastrotomy. Some form of hook was thought of, but none was available.

Having failed in these efforts I proceeded at once to do a gastrotomy, in order to carry out the method which Dr. White had so successfully adopted in his case. An incision two inches long was made in the linea alba, just below the ensiform cartilage, and the peritoneal cavity opened. The liver presented in the wound, and on raising the anterior margin the stomach came into view. The anterior wall was grasped and drawn through the parietal incision. Gauze pads were carefully placed around the wound to catch any fluid that might escape and so protect the peritoneum. An incision one and one-half inches in length was then made in the stomach near the cardiac end. The whale-bone bougie armed with a silk thread, having refused to pass the foreign body when introduced from the pharynx, was passed through the incision in the stomach into the esophagus, using the finger as a guide. The bougie was arrested by the jack-stone, but after some manipulation it was made to pass and present in the pharynx. One end of the thread was brought out of the mouth and the bougie withdrawn. A pledget of gauze of appropriate size was attached to the gastric end of the thread and drawn towards the mouth. When the gauze appeared in the pharynx the jack-stone (Fig. 1) was found to have accompanied it. The stomach wound was closed by a row of catgut sutures in the mucous membrane, interrupted silk sutures including the peritoneal and muscular coats, and Lembert sutures inclosing the latter. The abdominal incision was united by means of a silk suture in the peritoneum, while the tendinous layer was approximated by catgut and the skin by silk-worm gut. The usual dressing was applied.

During the first twenty-four hours after the operation nothing was administered by the mouth. At the end of this time small quantities of milk were given hourly, and the amount cautiously increased. Convalescence was uninterrupted and uneventful.

Plate I shows the scar sixteen days after the operation. The patient left the hospital on the twentieth day after the operation in excellent condition.

I wish to acknowledge my indebtedness to Dr. Frazier and Dr.

PLATE I.

Showing scar sixteen days after operation.

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Schleif for their kind assistance during the operation, and to Dr. Patterson, who administered the anesthetic.

It is rather a remarkable coincidence that two children, each having swallowed a jack-stone, should have come under observation at one hospital within a few weeks.

A CASE OF TUMOR (CHOLESTEATOMA) OF THE CEREBELLUM.

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Philadelphia,

Instructor in Nervous Diseases at the University of Pennsylvania; Assistant Neurologist to University Hospital.

THE following case of cerebellar tumor presents some points of interest:

The patient, William D., a machinist by trade, was of German birth, and 65 years of age.

The family history, so far as could be ascertained, was good. Venereal infection of any sort denied. Alcoholic beverages and tobacco used moderately. For the past ten years he had had a chronic bronchitis attended with profuse expectoration, tubercle bacilli were not found. The patient had had no other illnesses, excepting those due to the following accidents: Thirty-five years previous to coming under observation, he fell from a considerable height, striking upon his head, and was rendered unconscious for about thirty minutes. Since this fall he claimed to have been deaf in the right ear and to have lost the ability to whistle.[1] He was able to return to work, however, in a week. Ten years ago he fell from the fifth story of a building, striking the back of his head; a severe scalp-wound and unconsciousness of one hour's duration resulted, but he returned to work in three weeks, feeling as well as usual.

His present symptoms were first noticed about eight months before coming to the hospital, when, while supposed to be suffering from an attack of grippe, he fell backward twice without apparent cause. Three months after this his wife noticed that he was growing more irritable and bad, he was excessively drowsy during the day. In the latter part of this month (April, 1890) he again fell backward,

[1] Since the foregoing was written, it has come to the writer's notice that at this time he also had hemorrhage from the nose. This would point to the probability of there having been a fracture at the base of the skull. The paralysis of the seventh and eighth nerves was due to this. It being on the right side and the tumor on the left, the paresis could hardly have been due to the growth.

striking the back of the head upon a piece of timber; from this time until the following July nothing new was noticed; he was able to continue at work, his position being one of responsibility. On July 1 he fell down in the street and was carried home. At this time he began to complain of a constant dull pain in the back of the head and of severe nausea and vomiting, provoked by assuming the erect position. For three weeks he was unable to raise his head from the pillow without a severe spell of retching and vomiting ensuing. Improvement then ensued, although he still had an attack of vomiting when he arose in the morning. About this time difficulty in walking was noticed. When seen by the writer in August, 1890, his condition was as follows: Severe pain in the back of the head was complained of, no tenderness elicited by percussion; he walked in a zigzag, reeling manner, like a drunken man, with a distinct tendency to fall to the right; there was inability to pucker the lips well, the angle of the mouth being drawn slightly to the left. The ears were examined by Dr. Randall, who reported total deafness in the right ear of nerve origin. The eye grounds and muscles were normal. Knee-jerks absent. No other indication of either motor or sensory paralysis was discovered. His memory had distinctly failed.

A diagnosis of probable tumor of the cerebellum was made, although he was put upon a vigorous anti-syphilitic treatment. Under this he improved so much that he was able again to return to work, although the headache and unsteadiness of gait still continued. At the end of six weeks the vomiting recommenced and the inco-ordination increased, so that in a few weeks he was unable to walk at all.

On November 8 it was noted that he was passing excessive quantities of urine, which symptom continued until death. On examination this was found to be of low specific gravity, but contained neither albumin nor sugar. In the early part of December he became somewhat maniacal, passed urine and feces in the bed, and had various delusions,—for instance, "he accused his wife of being drunk," said "that he had just been delivered of twins," etc. He would not ask for anything to eat, but would consume enormous quantities of food so long as it was put before him.

February 6, 1891, it was noted that the patient was having spells of screaming, during which he complained of pain in the head and right arm, and that, at times, he had slight muscular twitchings of the left side of the face, about this period also it was first noticed that he could not see well; ophthalmoscopic examination had been attempted previous to this but was not allowed. A few days after this paresis of right arm and leg was discovered (the presence or absence of sensory paralysis could not be determined), and a large

bed-sore rapidly formed over the sacrum. Shortly after this he became unconscious, and died on February 19, 1891.

The post-mortem examination was made about twenty-four hours after death by Dr. Allen J. Smith. Only the head was allowed to be opened, and then only sufficient examination permitted to verify the diagnosis, we managed; however, to secure the tumor. Dr. Smith's report is as follows: "The tumor was located in the left cerebellar hemisphere, beneath the upper surface in the lobus quadrangularis. It was spherical in shape, of a slightly elastic and soft consistence, three centimetres in diameter, non-encapsulated, non-infiltrative, and clearly circumscribed from the surrounding cerebellar tissue. The surface of the enucleated tumor seemed slightly granular and gritty. The cut surface was pale, with yellowish tinge and quite uniform. When examined with the microscope it was shown to be a cholesteatoma of the usual type, consisting of a matrix of spindle-shaped connective-tissue cells, with here and there the characteristic pearly bodies of this tumor. Transitions of whorls of the tumor cells into these pearly bodies could also be met. There were few blood-vessels, and these of small size. The brain did not present any other lesion excepting a few meningeal adhesions along the longitudinal sinus. There was some congestion with the attendant edema of the Meninges and brain substance."

Remarks.—While traumatisms are at times the apparent cause of brain tumor, it does not seem to the writer that the accidents (both head injuries) which this patient sustained can be considered as etiological factors, in the first place, the nature of the tumor is not such as would likely be caused by an injury, and, secondly, the interval (ten years) between the last fall and the time of the first appearance of symptoms is very great. While the tumor was in such a situation that it may have been latent for some time, still the rapid course of the case after symptoms did develop would seem to argue against the existence of the growth for that length of time. Throwing aside the traumatism as an etiological factor, the age of the patient when the tumor appeared is an interesting feature. Mills and Lloyd,[1] after an analysis of 100 cases of brain tumor, find only three occurring between the ages of 60 and 70 years.

Gowers says that "the third twenty-five years of life furnishes only one-fifth the cases."

The knee-jerks were absent, ordinarily they are increased in cerebellar tumor.

The absence of ocular symptoms until such a late period in the

[1] Pepper's System of Medicine, Vol. v.

case is also of interest. In growths in this locality they generally occur early.

The symptom of polyuria which this patient had is rarely mentioned among the symptoms of brain tumor by writers. Mills and Lloyd[1] do so, and also Bramwell.[2] It is not mentioned in any of the familiar text-books. It is especially noted in a case of cerebellar tumor reported by Dercum and Hearn.[3] This would seem to be a valuable confirmatory sign of growths in the region of the fourth ventricle.

The tumor itself is one of the rarest; in the 100 cases analyzed by Mills and Lloyd, before mentioned, only one cholesteatoma was found.

THE ANOMALIES OBSERVED IN THE DISSECTING-ROOM OF THE UNIVERSITY OF PENNSYLVANIA DURING THE SESSION OF 1895–96.[4]

By John M. Swan, M.D.,

Philadelphia,

Assistant Demonstrator of Anatomy, University of Pennsylvania; Pathologist to the Episcopal Hospital, etc.

Anomalies of the Muscular System.

The anomalous arrangements of the muscular system have been comparatively rare, and have been noted chiefly in the upper extremity. The most common of these abnormal arrangements was the presence of a third head to the biceps. This additional head occurred each time in the right arm, and was seen in three subjects.

In one subject a tendinous band was isolated, which arose from the common tendon of origin of the short head of the biceps and coraco-brachialis, and was inserted into the internal condyle of the humerus in common with the internal intermuscular septum. This tendinous slip passed down along the inner side of the arm and

[1] Loc. cit.

[2] Intracranial Tumors, p. 121.

[3] Philadelphia Hospital Reports, Vol. 1, 1890.

[4] During the winter of 1895–96, the work in the dissecting-room of the University of Pennsylvania required 184 subjects. As careful a watch as possible was kept upon these bodies, and with the co-operation of the assistant demonstrators and the students I am able to report the following anomalies. The list, I believe, is incomplete, owing to the difficulties in collecting the data; but the record is valuable. It is published by the permission of the Demonstrator of Anatomy, Dr. E. W. Holmes.

received muscular fibres from the pectoralis major and from the latissimus dorsi. This arrangement was seen on both arms.

In one instance there was a distinct muscular fasciculus, accessory to the brachialis anticus. This accessory slip took its origin from the anterior surface of the shaft of the humerus between the points of insertion of the deltoid and coroco-brachialis muscles. The muscular belly passed down the arm, being separated from the brachialis anticus proper by intermuscular connective tissue. The tendon of insertion blended with the tendon of the brachialis anticus, being the outermost band of tendinous fibres, and was attached to the outer side of the coracoid process of the ulna. This arrangement was seen in both arms of the subject.

A muscular slip from the fascia covering the infraspinatus muscle, near its lower angle, passed over to be inserted into the fascia covering the insertion of the deltoid muscle in one subject.

In the right forearm, in one instance, the tendons of both the extensor carpi radialis longior and the extensor carpi radialis brevior divided, and one of the slips from each tendon was inserted into the second and one into the third metacarpal bones.

An accessory tendon from the deepest stratum of muscular fibres of the extensor ossis metacarpi pollicis was inserted into the trapezium in the right forearm. Morris[1] mentions this insertion as frequently occurring; it was only observed once in the 184 subjects.

In one instance there was no tendon from the flexor brevis digitorum to the fifth toe; the place of the missing slip being taken by an extra bundle of tendinous tissue from the flexor longus digitorum.

On the right side of the neck, in a muscular subject, a robust slip of the platysma myoides had a rather distinct origin from the middle of the clavicle, and was inserted into the mastoid process of the temporal bone. In the same subject a second slip of the platysma myoides arose anterior to the one just recorded, and was inserted into the fascia covering the anterior border of the trapezius.

Visceral Anomalies.—The malformations of the viscera have been limited in the extreme, only one, that of a right lung which had but two lobes, having been recorded, besides the congenital absence of the vermiform appendix; the latter has previously been published.[2]

Anomalies of the Arterial System.—Four branches were given off from the arch of the aorta in three cases; these were the innom-

[1] Human Anatomy, 1893.

[2] University Medical Magazine, December, 1895.

inate, the left common carotid, the left subclavian, and, between the two latter vessels, the left vertebral. In one of these cases the vessel coming off between the left common carotid and the left subclavian divided forty-nine millimetres above its origin into the left vertebral and the left inferior thyroid. In another instance the vertebral artery entered the fifth cervical costo-transverse foramen.

The arch of the aorta gave off only two branches in two instances. In both these cases the left common carotid was a branch of the innominate and the latter vessel, and the left subclavian the branches of the arch of the aorta.

In one of the subjects the arrangement of the phrenic arteries was very interesting. On the right side this vessel appeared as a branch of the renal artery; on the left side it arose from the aorta, below the position of the origin of the superior mesenteric and just above the origin of the left renal.

The arrangement of branches from the celiac axis, in one instance, showed a marked departure from the normal condition of affairs. In this case the celiac axis divided into the hepatic and splenic arteries; the gastric being a branch of the hepatic, but anastomosing with the pyloric artery, as is the rule. The hepatic artery in this case gave off a large colica sinistra, the normal colica sinistra, from the inferior mesenteric, being quite small and anastomosing with the abnormal branch. The abnormal colica sinistra, in its passage to anastomose with the normal colica sinistra, sent a branch to the head of the pancreas. The colica media and colica dextra had a normal origin from the superior mesenteric artery, but they united to form one trunk soon after their origin from that vessel; this trunk subsequently divided into branches which were distributed normally.

In another instance the hepatic artery was very small, but showed the usual branches. The vessel was evidently insufficient for the supply of the liver, and it was assisted by a branch from the gastric artery which was distributed to the left lobe of the liver and a branch from the superior mesenteric which was distributed to the right lobe of that organ.

Double renal arteries were observed in three subjects; in two cases the condition was unilateral, in one bilateral. In two of these cases the additional vessel entered the organ at the hilum; in the other case the second artery entered the lower portion of the organ. The normal relation of vein, artery, ureter, from before backward, was disturbed in all except one case, the right side of the bilateral case. In two cases the second artery was the most ventral structure, the relation being artery, vein, artery, ureter. In a third instance the relation from the ventral to the dorsal surface was artery, vein,

ureter, the second vessel in this case passing away from the hilum. In the case in which the relations were normal both renal vessels lay together between the vein and the ureter. It seems that anomalous renal arteries have not been as frequent among these bodies as one would suppose, and there may be many more anomalous arrangements than have been observed among our cases. It is well understood, I believe, that the renal vessel may bifurcate at any point between the aorta and the hilum of the kidney, and that the two vessels thus formed may pass together to the hilum of the organ, or one may leave the regular path and enter the kidney at its upper or its lower extremity. Dr. Holmes suggested that these anomalous renal arteries might be the cause of fatal hemorrhage after operations for removal of the kidney. This can be readily appreciated; for, if an anomalous vessel passes to the upper or lower portion of the kidney, it may not be included in the ligature which constricts the structures at the hilum. It would, therefore, be well to search for such anomalies during the course of a nephrectomy.

The ovarian artery in one instance arose from the renal artery on both sides. Such a condition, in case of nephrectomy with inclusion of this abnormal branch in the ligature, or in case the ligature was placed between this branch and the aorta, would certainly lead to sloughing of that ovary and that portion of the broad ligament which are supplied by the vessel under consideration.

The ilio-lumbar artery was once seen as a branch of the common iliac artery and once as a branch of the external iliac.

In one instance the obturator and deep epigastric arteries arose by a common trunk from the external iliac artery on both sides of the body. The danger arising in operations for the relief of strangulated femoral hernia from the course of the obturator artery necessitated by this origin has been frequently indicated.

In one case the left common iliac artery passed through the substance of the psoas magnus muscle.

In one case a middle thyroid came from the innominate artery.

The lingual and facial arteries had their origin by a common trunk from the external carotid in two cases.

Anomalies in the manner of origin of vessels from the axillary artery were frequent, abnormal arrangements of the branches of this artery having been observed eleven times. Of these eleven anomalous arrangements the most common seems to be the origin by a common trunk of two vessels which, under the normal conditions, arise as separate branches. Thus, the long thoracic and subscapular artery arose by a common trunk in three cases; the long thoracic, the subscapular, and the posterior circumflex in two; the acromio-

thoracic and subscapular in one; the acromio-thoracic and long thoracic in one; and the anterior and posterior circumflex in one. Of the three remaining abnormalities the most interesting was that in which a branch of the posterior circumflex artery passed downward beneath the external head of the biceps and accompanied the musculo spiral nerve and the superior profunda artery in their course around the humerus. In one case the superior thoracic artery passed directly to the chest wall, two and a half centimetres above the upper border of the pectoralis major muscle, without passing between that muscle and the pectoralis minor. In another instance the acromio-thoracic artery arose from the axillary as two vessels, one passing to the chest wall, the other passing outward to the acromial region. In one of the cases in which the long thoracic and subscapular vessels arose from the axillary by a common trunk, the dorsalis scapulæ arose as a distinct branch of the axillary. In one case an anastomotic branch arose from the long thoracic artery and passed along the inner surface of the arm to join the inferior profunda. Such an arrangement as that just described, or as that spoken of above, in which an extra vessel passed around the humerus in the musculo-spiral groove, would give rise to unexpected and unaccountable hemorrhage in an amputation of the arm after the usual number of vessels had been tied.

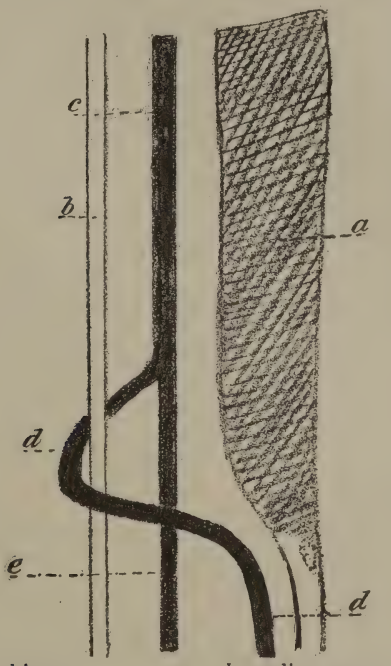
High bifurcation of the brachial artery was seen in seven subjects, bilateral in two, unilateral in five. This bifurcation, as has frequently been shown, may occur at any point between the posterior axillary fold and the usual place of division. The relation of the structures was carefully examined in two of these cases before complete dissection had disturbed the arrangement of the parts. In the first instance one of the branches was small in calibre and was continuous in the forearm as the radial, the other branch divided at the usual position, in the triangle at the bend of the elbow, into two vessels of equal calibre; one of these became the ulnar, the other became the median. In the second case the brachial artery divided into the ulnar and the radial. Just after the vessels were given off the ulnar artery was the most external, the median nerve was the central structure, and the radial artery is the most internal, having passed behind the median nerve. About two and a half centimetres below the point of division the radial artery crossed the median nerve and the ulnar artery obliquely and assumed the most external position,—thirteen millimetres above the bend of the elbow. In this situation the relations from without inward were: tendon of the biceps, radial artery, ulnar artery, median nerve. (Fig. 1.) The radial artery entered the forearm by passing between the pronator radii teres and

the supinator longus (brachio-radialis). The ulnar artery first lay to the outer side of the median nerve, but finally crossed it below the bend of the elbow. The anastomotica magna was a branch of the ulnar vessel.

In one case the superior and inferior profunda arteries arose by a common trunk from the brachial.

In one instance the brachial artery did not divide into the radial and ulna until it had reached a point seven centimetres below the bend of the elbow. The posterior ulnar recurrent artery in this case

FIG. 1.



a, biceps. *b*, median nerve.
c, brachial artery. *d*, radial artery.
e, ulnar artery.

was a branch of the brachial. The anastomotica magna was given off from the brachial sixteen and a half centimetres above the bend of the elbow and passed above the tendon of the biceps, but beneath the bicipital fascia to be distributed to the supinator longus (brachio-radialis) and extensor carpi radialis longior muscles and to the periosteum.

In two subjects the radial artery was a branch of the axillary, having its origin above that of the anterior circumflex. The vessel

thence passed down to the forearm as an occupant of the superficial fascia, lying above the bicipital fascia. In the usual situation below the bend of the elbow the brachial artery divided into two branches; one of these branches became the ulnar, the other corresponded to the radial recurrent and broke up into small twigs which were distributed to the muscles in the neighborhood, particularly to the supinator longus (brachio-radialis). This arrangement was seen in both arms.

In one instance the superficial palmar arch was formed by the anastomosis of a well-developed median artery with the ulnar. The median artery entered the hand by passing beneath the anterior annular ligament.

In one subject the median artery arose as a branch of the ulnar and pierced the median nerve. It passed under the anterior annular ligament at the base of the thenar eminence and divided into two branches. The outermost of these two branches divided into the arteria princeps pollicis and the radialis indicis and formed an anastomotic loop with the first dorsal interosseous in the web between the thumb and first finger. The innermost of these two branches supplied the adjacent sides of the second and third digits. The ulnar artery in this case passed above the anterior annular ligament and divided, midway in the palm, into two branches which supplied the adjacent sides of the third and fourth and fourth and fifth digits. The artery which supplied the inner side of the fifth digit was a branch of the deep branch of the ulnar and was given off just as the latter vessel ran across to form the deep arch; it lay, therefore, beneath the flexor brevis minimi digiti muscle. It is needless to say that the superficial palmar arch was wanting. The anomalous arrangement was seen in both forearms and in the right, in addition, the median, ulnar, and common interosseous arteries arose by a common trunk at the point of bifurcation of the brachial.

In one case the arteria profunda femoris arose as a branch of the common femoral one centimetre below Poupart's ligament. It lay, first, to the inner side of the superficial femoral; and, finally, passed behind that vessel to take up its deep position. In this case the external circumflex was a branch of the superficial femoral; the internal circumflex was a branch of the deep femoral.

In one subject the internal circumflex was a branch of the common femoral artery.

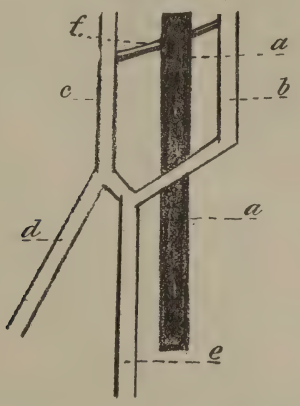
Anomalies of the Nervous System.—Out of thirteen recorded instances of abnormal nerve-course or distribution, nine affected the median.

In one instance the outer and inner heads of the median nerve

continued down on either side of the axillary and brachial arteries as two robust cords. At a point 13.6 centimetres below the tendon of the latissimus dorsi, these two cords united to form the trunk of the nerve. High in the axilla, in the position in which the two heads of the median usually unite, the two cords were connected by a small fasciculus which lay superficial to the artery. The musculo-cutaneous nerve was given off just before the outer and inner heads of the nerve joined and did not pierce the coraco-brachialis muscle, but passed immediately beneath the biceps to lie between it and the brachialis anticus muscles (Fig. 2).

In one case the median nerve was formed by an external and an internal head, and the musculo-cutaneous nerve sent two communi-

FIG. 2.



a, brachial artery. *b*, outer head of median nerve.
c, inner head of median nerve. *d*, musculo-cutaneous nerve.
e, median nerve. *f*, connecting fasciculus.

cating bundles, as large as the inner head of the nerve, over to the median after it was formed (Fig. 3).

In one case the median nerve pierced the fibres of the flexor sublimis digitorum muscle in the forearm.

In one subject the two heads of the median did not unite until they were 3.6 centimetres below the point of origin of the musculo-cutaneous nerve.

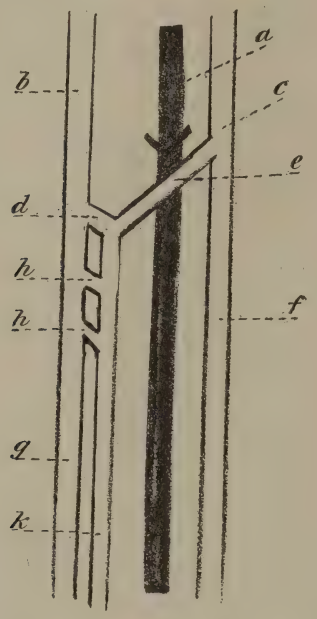
In three cases the median nerve was formed by two heads which arose normally, one from the outer and the other from the inner cord of the brachial plexus; but these heads were smaller than normal. From the musculo-cutaneous nerve, a branch was given off which pierced the coraco-brachialis muscle at a lower point than the musculo-cutaneous itself, and which then curved inward to join the median,

crossing over the brachial artery seven and a half centimetres below the tendon of the latissimus dorsi muscle. In one of these cases the arrangement was bilateral.

In one case the median nerve was formed by two heads which united far down the arm, both of which lay internal to the brachial artery after the first five centimetres of their course.

In one case the relation of structures in the triangle at the bend of the elbow was a tendon of the biceps, median nerve, brachial

FIG. 3.



a, brachial artery.
b, outer cord of brachial plexus.
c, inner cord of brachial plexus.
d, outer head of median nerve.
e, inner head of median nerve.
f, ulnar nerve.
g, musculo cutaneous nerve.
h, *h*, fasciculi from musculo-cutaneous to median.
k, median nerve.

artery, from without inward. In the arm the nerve lay first internal, then above, and finally outside the brachial artery.

In one case the ulnar nerve passed beneath the anterior annular ligament to reach the palm of the hand.

In one case the radial nerve pierced the supinator longus (brachio-radialis) muscle at about its centre and passed for about five centimetres in the muscle, finally emerging to reach the dorsal aspect of the forearm.

In one subject the anterior interosseous nerve sent a large communicating fasciculus to the ulnar nerve.

One high division of the great sciatic nerve is recorded.

It is well understood, I think, that the anomalous fasciculi of nerve-fibres which pass from one nerve-trunk to another are composed of fibres which have failed to enter the proper nerve at the proper time. In that case in which the fasciculus passed from the anterior interosseus to the ulnar the course of the errant fibres was evidently through the inner head of the median and anterior interosseous nerves to the ulnar, instead of directly into the ulnar from the inner cord of the brachial plexus.

My object in recording these anomalies has been to make a record rather than to draw definite conclusions. Many of them, I think, will be found to bear a close and important relation to operative surgery and to medicine.

My thanks are due, and are here expressed, to those students of the second-year class who have assisted me by handing in memoranda of the deviations from the normal which they found in the course of their dissections.

THE KLEBS-LÖFFLER BACILLUS IN APPARENTLY NORMAL THROATS AND NOSES.

By H. W. Gross, M.D.,

Former Bacteriologist to the Children's Hospital, Boston.

Though it be generally admitted that the chief etiological factor in true diphtheria is the Klebs-Löffler bacillus, yet the absence of it in many cases suffering from the disease, and, on the other hand, the presence of it on many apparently healthy mucous membranes, surrounds this organism with a certain amount of uncertainty, and too often puts doubt into the minds of those whose work has not led them into a personal study of the organism. Thus a certain amount of interest is always attached to a systematic bacteriological investigation of any large number of apparently healthy throats and noses. It has been estimated by the New York City Health Department that virulent diphtheria bacilli were present in about 1 per cent. of healthy throats in New York City at the time the investigations were made;[1] and Dr. William Welch reports that, out of 330 healthy mucous membranes examined, he fouud about 2 per cent. with virulent Klebs-Löffler bacilli, and about 7 per cent. with organisms morphologically identical with this bacillus, but showing no virulence. This bacillus,

[1] Scientific Bulletin, No. 1, Health Department, New York City.

furthermore, he states, "is the genuine bacillus devoid of its virulence," and not a pseudo-bacillus.

In the Children's Hospital of Boston, during the six months from December 1, 1895, to June 1, 1896, culture examinations were made of the throats and noses of all cases entering the hospital, two cultures, twenty-four hours apart, being taken on admission, and subsequently repeated once weekly as long as the case remained in the house, unless the Klebs-Löffler bacillus was found, in which case daily examinations were made until three successive negative cultures, twenty-four hours apart, were obtained. The work was undertaken with the object of preventing outbreaks of epidemics of diphtheria, which in past winters had occurred in this hospital with most disastrous results, and the success in accomplishing its purpose has already been referred to in an article on "Immunization by Antitoxin," by Dr. F. Gordon Morrill.[1]

The methods used in making the examinations were briefly as follows: In obtaining material from the throats and noses, sterilized cotton swabs were used, it being clearly evident that in studying cases in which there were no signs of infection, these were preferable to the platinum wire, as by them a larger surface of mucous membrane is touched, and the chances of reaching the desired organism proportionately increased. In growing the cultures the usual mixture of Löffler—one part of sugar bouillon and three of beef-blood serum—was used. The advantages offered by this medium for diagnosis are so great that in only one or two cases was it thought necessary to put the cultures through any of the other media. Having been thus grown for from sixteen to twenty-four hours on blood serum, the specimens were stained by Löffler's alkaline methylene blue, and in all cases where diphtheria was found the diagnosis was verified through staining by Hunt's method. This latter method, now largely used at least in this locality, consisting of a double stain of methylene blue and gentian orange, with tannic acid as a mordant, is particularly efficient in bringing out the dots which characterize the organism in question. For the inoculation of guinea-pigs, pure cultures were obtained on bouillon, and from a half to two cubic centimetres of these were injected hypodermically into the subcutaneous tissue of the abdominal wall. In all cases the second generation of the organism from the throat or nose was used for injection. Before placing the original serum-tube in the incubator, dilutions were made on blood-serum plates, from which on the following day colonies could be picked and grown in bouillon.

[1] Boston Medical and Surgical Journal, May 21, 1896.

From the investigations conducted on these lines it was shown that out of 316 cases,—the total number examined,—26 at one time or another showed the presence of the Klebs-Löffler bacillus. This gives a percentage of 8.2. Out of these 26 cases showing the organism two may be said to have had clinical diphtheria. Omitting these two, we may say that out of 314 normal throats and noses examined 7.9 per cent. contained the bacillus of diphtheria. The average persistence of the bacillus on the mucous membrane was fifteen days; the shortest time was one day, and the longest 103 days, or over three months. Of these cases the nose was the principal habitat in 17 cases, or 65 per cent., the throat in the remaining 35 per cent. In one case the Klebs-Löffler was found, together with other organisms, in the ear, the child suffering from otitis media, which may or may not have been due to this bacillus.

Of the twenty-six cases in which the organism was found one is deserving of special notice from the length of time in which the infection persisted. Welch[1] has mentioned a case in which the bacillus was found for seven consecutive weeks, and Osler[2] a case where it was known to remain for eighty-four days. The case in the Children's Hospital was as follows: Daniel C., aged 9 years, was discovered having the organism in his nose on January 31, two negative cultures twenty-four hours apart, having been obtained one week before. From this time until May 13 daily cultures showed, with a few exceptions, to be subsequently mentioned, the persistence of the organism on the nasal membrane. On May 14, 15, and 16 no Klebs-Löffler bacilli were found, and it was thought by those in charge of the case an opportune time to rid the hospital of his presence. He was therefore discharged. Prior to this time, it is interesting to note, on several occasions, the bacilli seemed about to disappear. On February 25 and 26 none were found; on March 13 and 14 cultures were negative; and, again, on March 29, 30, and 31, three consecutive days, no diphtheria bacilli were found. But always on persistent search the bacillus was again demonstrated, often growing profusely in the tube. The virulence in this case was first tested by a culture taken on April 1. Two pigs were inoculated and both died within forty-eight hours, the autopsy showing the usual lesions of experimental diphtheria. Cultures taken on May 2 proved fatal to one guinea-pig in four days. Finally, a culture inoculated into two pigs, on May 12, seemed to possess little or no virulence, the only reaction being local induration, and in one pig, ulceration.

[1] American Journal of the Medical Sciences, Vol. CVII, p. 427.

[2] Archives of Pediatrics, Vol. XII, p. 528.

As regards the virulence of these organisms, it is unfortunate that lack of time and facilities did not permit of the isolation and inoculation of the organisms from a large majority of the cases, and it is, therefore, impossible to state what percentage of the total number were virulent. It has, however, heretofore, been fairly well demonstrated that in cases having suffered from diphtheria, virulent bacilli often persist for some weeks on the mucous membrane. In a long series of inoculation experiments, reported by J. H. Wright,[1] several cases showed marked virulence after being obtained in culture from the cases for from four to six weeks. As regards cases where there is no past history of the disease, as was the case in our series, Welch reports about 2 per cent. of virulent organisms out of 9 per cent. in which they were found to be present. The few experiments which were conducted by us in this line were done through the courtesy of Professor Ernst, in the Bacteriological Laboratory of the Harvard Medical School. Of the five cases inoculated, some virulence was present in four, the time of death varying from thirty-six hours to fourteen days after inoculation.

It may be stated in conclusion that our experiments seem to fall well in with past investigations towards showing that diphtheria bacilli, virulent and non-virulent, are present in an unfortunately large percentage of apparently unaffected nasal and pharyngeal mucous membranes.

ALUMNI NOTES.

Dr. E. W. Laidley (class of '92) is in London for a post-graduate course.

Dr. C. F. J. Kennedy (class of '91) has been appointed visiting physician to the House of Mercy Hospital, Springfield, Mass.; and Dr. C. H. Calkins (class of '82) has been made oculist and aurist to the same institution.

[1] Boston Medical and Surgical Journal, October 4, 1894.

EDITORIAL.

THE REMOVAL OF FOREIGN BODIES IN THE ESOPHAGUS.

Current medical literature but rarely contains any reference to the treatment of foreign bodies in the esophagus, and systematic works on surgery devote but a limited space to this subject. This may be due to the fact that it is an accident of comparative infrequence. Although a large number of such cases are on record, it falls to the lot of any one physician to meet with but a limited number of examples in the course of his professional career. Another reason for the brief and general nature of the consideration given this accident may be that although certain fundamental principles may be dogmatically stated, still each case is, more or less, a rule unto itself. The reports of two recent instances of unusual foreign bodies in the esophagus add not only interest to this subject, but they form an instructive addition to the literature of the subject. The first of these (University Medical Magazine, June 1896, p. 710) is interesting as being, we believe, the first case in which the Röntgen ray was employed to detect a foreign body in the chest; the skiagraph showing not only the location of the body, but also its nature. The novel manner adopted by Dr. White in removing the intruding substance is highly instructive. Although armed with almost every form of esophageal forceps supplied by the instrument-makers, not one of them could be made to reach the jack-stone. The peculiar shape of the toy not only contra-indicated an effort to push it on into the stomach, but this course, if successful, would only shift the point of danger. Sooner or later, dangerous or fatal consequences would almost inevitably arise from such an object in the alimentary canal. Esophagotomy was considered, but was rejected as impracticable. The very short, fat neck of a child, 2½ years of age, offered such a limited space in which to work that the operation would have been most difficult; besides, the dangers to be encountered were not inconsiderable. Moreover, as the body was within the chest, and some distance from the usual site of the incision for esophagotomy, its removal with forceps would have been difficult, if not impossible. In this case, the foreign body had already been in the esophagus twelve days. More or less ulceration must have taken place, and the child was showing

the effects of the lack of sufficient nourishment, and the constitutional disturbance attendant upon such an accident. The necessity for promptly removing the foreign body was imperative, and the decision to perform gastrotomy, and extract the jack-stone by means of a pledget of gauze attached to a thread, proved most happy in its results.

The second case (see p. 29 of this issue of the MAGAZINE) is of interest principally as a confirmation of the value of the method of removal employed in the first instance. It also illustrates an extension of the use of the Röntgen ray in cases in which the opportunity of making a skiagraph is not afforded, as in this one.

Of foreign bodies in the thoracic portion of the esophagus, Poulet writes ("A Treatise on Foreign Bodies in Surgical Practice," p. 132), "Esophagotomy being impossible in this region and extraction often impracticable, but two equally grave solutions remain to us, and are equally fertile in failures. (1) We may perform forced propulsion. (2) We may leave the foreign body to itself. Each of these methods of action has been followed by successful results and is justifiable; they are the only means left in those desperate cases which are almost beyond the resources of art." Compare with these views the definiteness and precision of the procedure employed in the two cases above referred to. Even such irregular bodies as jack-stones are safely removed. The mass of gauze employed in the extraction serves to dilate the esophagus and thus renders laceration improbable. Such bodies allowed to remain cause ulceration and perforation of the esophagus, periesophageal abscess, and, perhaps, penetration of the pleura or lung, or erosion of a blood-vessel and fatal hemorrhage.

The tolerance of the esophagus to foreign bodies is in many cases remarkable. According to Poulet (*loc. cit.*, p. 104) the gravity of a foreign body in the esophagusi ncreases "according as the symptoms are more insidious. All other things being equal, a body which primarily produces symptoms sufficiently serious to attract the attention of the patient and surgeon will produce less serious phenomena than a body which is at first tolerated and forgotten, and which may then give rise to the most disastrous consequences. In support of this assertion it will be sufficient to state that more than 100 cases of death have been due to the prolonged presence of a foreign body in the esophagus."

This is a most important observation, and should serve as a warning not to pass over such cases without careful investigation and prompt treatment should it be found that a foreign body is present.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

Concerning Rheumatoid Affections.

Gerhardt (XIV Kongress für innere Medicin in Wiesbaden, April 8–11, 1896, *Centralblatt für innere Medicin*, No. 17, 1896). The nature of acute articular rheumatism is still unknown. It has been impossible to demonstrate that any one infectious agent is answerable for all the cases. One observes spurious forms of articular rheumatism as complications of many and various diseases,—acute exanthemata, typhoid fever, dysentery, gonorrhea, scarlet fever, pneumonia, bronchiectasis, hematophilia, purpura, scorbutus, various diseases of the skin, erythema polyforma, psoriasis, urticaria, and syphilis. These joint affections may or may not be accompanied by fever. Three principal forms are to be distinguished,—joint pain, joint swelling, and inflammation and suppuration of the joint; to these may sometimes be added large collections of serous exudate within the joints, suppuration of the bones, and periostitis. At times one has been able to demonstrate within the joints the bacterium causative of the disease which the joint affection complicates, as in gonorrhea, pneumonia, erysipelas, and diphtheria. This may also be possible in typhoid fever. These metastatic joint affections resemble each other but little, while individual cases complicating the same disease have many points in common, as, for instance, the gonorrheal and scarlatinal rheumatism, each of which is tolerably characteristic. It is usually asserted that these spurious, articular rheumatoid affections are characterized by the non-implication of the heart. This is true in many instances, but directly the opposite has been frequently proved in many cases; in gonorrhea and scarlatina. It is also untrue that these rheumatoid affections are not beneficially influenced by salicylic acid, antipyrin, and the other antipyretics. In the first place, in one-sixth of the cases of true acute articular rheumatism the salicylates prove useless, and in a further one-third of the cases insufficient. On the other hand, in many of the cases of spurious joint rheumatism these remedies effect a favorable, in others, even a universally good impression. The joints are variously implicated in individual diseases; in gonorrhea principally the knee, in typhoid fever especially the hip. Referring particularly to individual diseases having complicating rheumatoid affections, that associated with dysentery occurs usually after the cessation of the primary affection, and affects most frequently the knee and ankle. Its duration is usually six weeks. It is more liable to occur after mild than after severe attacks of dysentery. The occurrence of gonorrheal rheumatism has often been denied, but it has been proved that many patients

with each recurring attack of gonorrhea of anus, are subject to rheumatism. This is only more frequently noticed with men than women, because by the latter the gonorrhea is often overlooked. In Gerhardt's clinic, 7.3 per cent. of all patients with articular rheumatism have had gonnorrhea. As is well known, the joint implication occurs usually late in the course of the gonorrhea, and is itself subject to many modifications of form and course. The scarlatinal rheumatism occurs early in the course of the attack of scarlet fever. It complicates 3.8 per cent. of all cases of scarlatina, most frequently affects the wrist, and is associated in 3.2 per cent. of the cases with cardiac implication. Reference is made to joint affections following relapsing fever, pneumonia, epidemic cerebro-spinal meningitis, typhoid fever, and syphilis, in which latter only mercury and the iodides are of service. In his clinic angina occurs in 21 per cent. of all cases of acute articular rheumatism. It is usually of a mild form and quickly subsides. We know that the tonsils are the favorite seat of bacteria which gain entrance to the mouth, and we also know that there occur there the same forms of bacteria which, in cases of acute articular rheumatism, have been found in the joints. It is, however, questionable if such cases are instances of bacterial metastasis from the tonsils; they can just as well be toxic articular implication such as occasionally ensues after the injection of diphtheritic antitoxin. There occur cases of rheumatoid diseases which are not dependent upon bacterial elaboration. Gerhardt believes that articular rheumatism occurring with angina is to be looked upon as true rheumatism and not as being metastasis.

The Treatment of Locomotor Ataxia.

Erb (*Sammlung klinischer Vorträge*, No. 150, April, 1896) gives a very detailed dissertation concerning the treatment of locomotor ataxia, of which here but the conclusion, as briefly as possible, and necessarily, therefore, imperfectly, can be given.

(1) In the very earliest stage of the disease, when the indication thereto exists, an antisyphilitic treatment should be instituted. This indication is present in all very fresh cases, in which the occurrence of the syphilitic infection does not antedate by too great a length of time the development of the initial symptoms of the tabes; in all cases in which there are still present symptoms of active syphilis of the skin, mucous membrane, bones, etc., or in which symptoms of cerebral or meningeal syphilis exist; in those cases which earlier were subject to an insufficient treatment of the syphilis. The treatment is to be carried out carefully, but energetically; not continuously, but rather intermittently, whereby operated periods of antisyphilitic treatment alternate with others during which tonics, electricity, etc., should be employed. The most serviceable specific treatment consists in the employment of inunctions of from four to six grammes of mercurial ointment daily until thirty or forty or, in some instances, even fifty or sixty inunctions have been made. Due attention must be given to personal cleanliness, the care of the mouth, etc. There should occur then intermissions of the mercurial exhibition of from four to twelve months, during which iodide of potassium, in doses of from one and a half to four grammes or more daily should be given. The iodide of potassium is especially recommended in cases complicated with tertiary manifestations, affecting the skin, mucous membrane, bones, brain, etc.; likewise in cases with severe lightning pains, in cases with rapid and progressive increase in the severity of the symptoms, in cases with peripheral neuritis, etc. It is not necessary to continue the iodide during the entire period of the mercurial intermission, but a judicious use of tonics, electricity, etc., is recommended. Later we should employ hydro-

therapy, systematic baths, nitrate of silver, and possibly, also, suspension, in addition to the necessary symptomatic treatment.

(2) In later stages we must, above all, carefully consider the advisability of instituting alternating courses of mercurial and potassium iodide treatment. In addition we have regard for the general care and nutrition of the patient, and in summer may employ systematic baths and hydrotherapy, massage, and electricity; in winter especially gymnastics and massage, suspension, renewed electrical treatment, in addition to variously indicated medicaments; not forgetting psychical treatment.

(3) In very advanced stages it is recommended to no longer annoy the hopeless and helpless patient with various hydrotherapeutic procedures, electricity, and the like, but to limit one's self to the necessary symptomatic treatment. Psychical therapy is of the utmost importance, and may occasionally be judiciously combined with some new or untried therapeutic procedure. It is in such cases that the sympathy and tact of the physician will find their greatest range of usefulness.

Tuberculous Cervical Glands and Carious Teeth.

Starck (*Münchener medicinische Wochenschrift*, No. 7, 1896). In the absence of any other cause to explain the condition, Starck, examining 113 children with enlargement of the cervical lymph-glands, was able to demonstrate in 41 per cent. of the cases the existence of carious teeth. These corresponded in location, in time of development, and in intensity with the condition of the teeth. Caries of the teeth of one or the other side of the jaw was associated with enlargement of the glands of the same side, and caries of the front teeth existed in conjunction with enlargement of the anterior glands, while caries of the molars was combined with enlargement of the glands about the angle of the jaw. Previous to the development of the glandular enlargement there was frequently a history of toothache or caries. Caries of many teeth was usually associated with enlargement of a chain of glands, while caries of a single tooth and slight enlargement of the glands existed together. He reports two cases in which he was able to demonstrate positively that carious teeth had been the point of entrance of the tuberculous poison. One a boy, aged 18 years, the other a girl, aged 14 years, had no hereditary predisposition to tuberculosis, and previously had always been healthy. In both cases the glandular enlargement ensued subsequently to toothache. In the case of the boy in two molar teeth numerous tubercle bacilli were demonstrated. In the case of the girl between the roots of a molar tooth was seen a macroscopic suspicious granulation tissue, which, on microscopic examination, was found to consist of tubercular nodules and giant-cells. In the case, although operated upon, a recurrence ensued after an interval of a year and a quarter. In three other cases such intimate connection between caries of the teeth and tuberculosis of the teeth could not be proved, though probable. The carious teeth and the enlarged glands should be removed at once, whereby the liability of general implication of the body is reduced to a minimum. A proper hygiene of the teeth is inculcated to avoid the occurrence of such glandular enlargements as well as other infections; perhaps, also, it may lessen the occurrence of malignant tumors of the jaws and neck.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

Three Successful Cases of Spinal Surgery.

Chipault (*Revue de Chirurgie*, February, 1896, p. 134) gives the details of three cases of spinal surgery in which perfect success was obtained. He reports them on account of their rarity.

The first was one of hemicompression of the spine by displacement backward of a fragment of the left half of the eleventh dorsal vertebra. There was pain on pressure over the spinous process of the eleventh dorsal vertebra, paralysis of the left leg, and anesthesia of the genitals; also paralysis of bladder, with anesthesia of the right leg, but without paralysis. No improvement having occurred, eleven days after the accident operation was done. A long incision over the spines exposed the eleventh and two adjacent dorsal vertebræ. The laminæ of these three were resected and the vulnerating fragment was found to consist not only of the lamina of the eleventh dorsal vertebra, but also of its lateral mass and the left postero-lateral portion of its body. This piece, displaced backward, reduced considerably the left half of the spinal canal and compressed the corresponding spinal roots, and, as was shown by opening the dura, also the left half of the spinal marrow itself. The bone was removed in pieces, the dura sutured, and the soft parts closed without drain. Improvement began immediately after the operation, and in two months the patient walked with the aid of two canes, in five without any aid, and in a year could walk all day without fatigue. The flexibility of the spine was excellent, but some slight atony of the bladder and rectum persisted.

The diagnosis of the second case was stretching of the fourth and fifth cervical roots, by a recurring subluxation forward and to the right of the fourth cervical vertebra on the fifth.

The accident was followed immediately by paralysis of all four members. One month later there remained only motor and sensory troubles of the left superior extremity. This was present at the time of the operation, one year after the accident. An incision reaching from the occipital protuberance to two centimetres above the seventh spinous process enabled the operator to expose the upper five cervical vertebræ. The wound was tamponed for a few minutes to arrest hemorrhage. The fourth cervical vertebra was found luxated in front and to the right. It was reducible in great part by traction on the head. While the reduction was so accomplished, a silver wire was fastened to the spinous process of the third cervical vertebra carried around the side of the fourth and attached to the fifth. This kept the luxated bone in place. The periosteum, muscles, and skin were then sutured and a plaster dressing applied. The operation consumed one and a half hours. There was no shock, no fever, and the patient was up in eight days. After a month the plaster was removed and the patient is well except a restriction in the amount of flexion of the neck, due, probably, to the wire which still remains.

The third case is an example, the first ever published, of an idiopathic neuralgia of the fifth right posterior spinal root. No cause could be found for it. The neuralgic pain was intense. An incision was made from the second cervical spine

to the third dorsal, the muscles separated from the spine, and three arches—the first dorsal and the eighth and seventh cervical—were removed with a cutting forceps. The dura mater was incised in the middle line for the entire distance, and after loosening the visceral layer of the arachnoid and subarachnoid tissue, there was exposed the medulla and three posterior roots of the right side. They were resected from their origin in the medulla to their exit through the dura mater. The dura mater and wound were then sutured shut.

The operation took two and a quarter hours. The success of the operation was complete and permanent.

Post-Operative Intestinal Obstruction.

Adenot (*Revue de Chirurgie*, January, 1896, p. 15) divides post-operative intestinal obstruction into the following classes:

(1) Occlusion caused by adherence of the intestine to raw surfaces, intraperitoneal drains, and inflamed organs.

(2) Occlusions due to bands.

(3) Those due to anomalous position of the intestines.

(4) Those due to an exaggeration of the normal left subcostal angle of the colon.

(5) Spasmodic occlusion.

(6) Occlusions due to inefficient operative procedures.

There are three marked symptoms of post operative intestinal obstruction,—viz.:

(1) Persistent absence of the passage of flatus.

(2) Nausea and vomiting.

(3) Painful point in abdomen.

As regards treatment, one should not delay too long. While it is legitimate to try mild purgation, insertion of rectal tube, etc., the amount of such treatment should be abridged proportionally to the severity of the symptoms and clearness of diagnosis. The period of operation will be from three to five days, according as the vomiting is urgent and there is absence of stools or passage of flatus.

The abdomen should be opened largely. Work quickly and have good assistants. Examine the cecum; if it is not distended, the occlusion is located higher up in the small intestine. If it is distended, explore the sigmoid flexure. One should always follow a definite plan: first ascertain the extent of the occlusion, then its location, and, lastly, the cause. Examine the pedicles, raw surfaces, angles of the intestine, drainage apparatus, etc. Examine the colic flexure of left side. If the obstacle cannot be found, evisceration must be performed. Recourse should not be had to this grave procedure too readily, notwithstanding that it has succeeded in the hands of Jaboulay and Pollosson. Tuja seems to resort to it rather readily. Sometimes an artificial anus is necessary, but it is not an operation of choice.

Effusion of Blood into the Prevesical Space simulating Distention of the Bladder.

Page (*British Medical Journal*, July 18, 1896) gives the history of a boy, aged 7 years, who had been knocked down by a vehicle. He was in a condition of collapse, and the parts looked as if a wheel had passed up over his right leg and thigh and thence over the right side of the abdomen and chest. A few drops of blood trickled from the urethra. A soft catheter passed apparently into the bladder and drew off a small quantity of blood. It was thought that the kidney had been injured

and that the blood came from it. Soon a tumor appeared in the region of the bladder, and this organ was then thought to be distended with urine; a catheter, however, failed to withdraw any. The accumulation was then thought to be possibly due to blood-clot, and, an effort to remove it through the urethra failing, a suprapubic puncture was made, through which a large catheter was passed and a large amount of clotted blood removed. The next day urine was found to be coming freely from the suprapubic opening. The child died on the third day. On post-mortem examination, on opening the abdominal cavity, there was seen above the symphysis pubis a cavity containing broken-down blood-clot and urine. On further search the pelvis was found to be fractured in three places. One was a green-stick fracture running across the right body of the pubis; another larger one through the left body of the pubis, just above the acetabulum, entering the thyroid foramen and communicating with the cavity above mentioned; and a third fracture a little below the junction of the rami of the left pubes and ischium. The urethra had been torn completely across and the rectum punctured by displaced bone. In the attempts to empty the bladder it had never been opened, but only the prevesical space.

Two additional cases of pelvic injury are given in which recovery followed free perineal drainage.

Bony Changes in Connection with Chest-Disease.

Godlee (*British Medical Journal*, July 18, 1896), in a clinical lecture, discusses the relation of various bone and joint affections in relation to diseases of the chest. He comes to the following conclusion: At least two conditions are included under the name "ostéoarthropathie hypertrophiante pneumique," and that the cases he has met with are examples of that form of osteo-arthritis which is associated with chronic septic suppurations, such as gonorrhea and leucorrhea, complicated with clubbing of the fingers, which he believes has nothing to do with the disease. The pathology of osteo-arthritis is very obscure, and he cannot believe that these probably septic conditions have anything in common with the rheumatic gout which we inherit from our mothers and our grandmothers, and he thinks that the sooner we recognize that they are totally different conditions the better. The other class of cases is that figured by Bamberger and recently most admirably described by Thorburn, in a communication to the Pathological Society, in which there is a more or less extensive chronic periostitis starting in the neighborhood of the joints, but ultimately involving the whole of the shafts of the bones. It is also accompanied by erosion of the cartilages in parts apparently not subjected to undue pressure. As to the pathology of these cases or their connection with thoracic disease he does not know. Thorburn is inclined to the view that it is a mild tubercular affection. Attention is drawn to its resemblance to the syphilitic cases described by Bowlby, and the author states while his own cases may possibly prove to be like those of Bamberger and Thorburn, he very much doubts it. He advocates having Marie's name restricted to those cases showing marked periosteal as well as joint affection.

Laparotomy for Perforating Typhoid Ulcer.

Bogart (*Annals of Surgery*, May, 1896) gives the history of the following case: A man, aged 30 years, had five years previously a sharp pain in right side of abdomen. The pain continued for three days, and was followed one year later by a similar attack, since then he had pain frequently, but lasting only a few hours. Four months ago the present trouble began. He had typhoid fever which lasted

four weeks; three weeks later he had a second attack of fever lasting about three weeks. Then, twelve days ago, the fever again appeared and subsided to normal for a day or two, when he was suddenly seized with severe pain in the lower portion of the abdomen, accompanied by chill, nausea, and vomiting. The temperature rose to 104° F., and later there were several copious loose stools. The pain was paroxysmal and attended with considerable rigidity of the abdominal muscles. Abdomen only slightly distended. Pulse 120, rapid and weak; temperature fell to 99° F. Hot turpentine stupes were applied and the patient seen ten hours later. His temperature was 101° F.; pulse 108; respiration 36.

Operation under ether. On opening the abdomen by an oblique incision a small quantity of sero-pus escaped. The appendix was found attached to the ileum, and on loosening it a minute opening was exposed through which gas and mucus escaped. This opening was closed with a running Lembert suture of fine silk and the appendix with its mesentery ligated at its base and excised. Gauze packing was employed and the upper portion of the wound sutured. The patient bore the operation well. Three hours later his pulse was 126; temperature 98.8° F.; respiration 36. During the succeeding forty-eight hours he was quite comfortable, his temperature never exceeding 100° F. On the third day vomiting set in, and on the fourth day he died. On post-mortem examination a stricture was found at the hepatic flexure of the colon, caused by old adhesion bands, reaching down from the gall-bladder. Under ordinary conditions of normal distention, the lumen of the bowel would be only partly occluded by these bands, complete obstruction having been determined by increased angulation from hyperdistention of the ascending colon.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Calcium Treatment in Diabetes.

Grube (*Therapeutische Monatsheft*, May, 1896, and *British Medical Journal*) adds to his cases of what might be called the "egg-shell" treatment of diabetes. In 1894 a diabetic man, aged 25, was sent to Grube for treatment. The elder brother had already died from the same disease. The patient himself had reached the stage when, in spite of strict dieting, sugar continues to appear in the urine. He had begun to lose in weight and strength, and attacks of gastric disturbance, associated with constipation and prostration, added to his troubles. In the beginning of 1895 a decided improvement took place in the general condition, which the patient himself attributed to the daily dose for two months of a full teaspoonful of powdered egg-shell, a remedy which he had heard of from an Englishman, apparently a fellow-sufferer from diabetes. Grube afterwards altered the treatment by substituting a powder made in imitation of egg-shells, which in 100 parts contain ninety-three parts calcium carbonate to seven-tenths of a part calcium phosphate and magnesium phosphate; four grammes of such a powder were taken daily. The same treatment —that is, egg-shell or its imitation—was tried by Grube on a diabetic man, aged 30,

whose father, brother, and sister had all died from diabetes. Unfortunately, this patient caught influenza, and died of diabetic coma. In a patient, aged 41, with severe diabetes, the result was more satisfactory. Of Grube's fourteen new cases, eleven were of the so-called "benign diabetes," and three of severe diabetes. In the eleven benign cases the treatment seems to have had no effect, either for good or for bad, whereas in the three severe cases a decided improvement in the general condition followed the treatment. The subjective symptoms were alleviated, and the body weight was increased, although the actual glycosuria was not lessened, and although acetonuria persisted in all three cases. Grube has noted temporary improvement in cases of severe diabetes, but never such a decided increase in the body weight, before he commenced the calcium treatment. He thinks that by this treatment there is hope that some cases of severe diabetes may be longer kept back from the cachectic stage of the disease.

Arsenic in Gastralgia.

Sawyer (*Lancet*, July 4, 1896) says, "Further observation in practice has confirmed my favorable opinion of the curative efficacy of arsenic in the various painful neuroses included under the name gastralgia. I have already laid before the profession my earlier experience in this subject. Romberg's well-known description of gastralgia is classical. He distinguished two forms of the malady,—gastrodynia neuralgica, which he held to be hyperesthesia of the gastric branches of the pneumogastric nerve, and neuralgia celiaca, which he attributed to hyperesthesia of the solar plexus. Clinical experience confirms the views of Niemeyer and of Henoch, that this distinction is difficult and of doubtful utility in practice. Gastralgic affections, severe and slight, are rare in hospital practice, and frequent among private patients, especially among those of nervous temperament. I need scarcely observe that for obvious reasons the diagnosis of gastralgia is one which should neither be lightly made nor negligently maintained. But pain arising in the stomach when the organ is empty, and relieved by the ingestion of food, is almost diagnostic, as the late Dr. Wilson Fox taught, of its nervous nature and origin. With due regard to the causal concomitants and antecedents of gastralgia, arsenic cures the disease. It is best to give the drug in pillular form. I exhibit a twenty-fourth of a grain of arsenous acid made into a pill, with two or three grains of some tonic vegetable extract, such as gentian, three times daily, half-way between meals. Scarcely any other medicinal treatment is needed in cases of moderate severity, and the use of the remedy should be continued for some weeks. In severer cases I use counter-irritation to the epigastrium of duly proportional activity. I have usually found a full and varied dietary suit gastralgic patients far better than a restricted 'dyspeptic' regimen. It is in such cases that Trousseau's maxim is true,—that we should know what a patient does eat before we advise him upon what he may feed."

Potassium Iodide in Biliary Colic.

Dunin (*Therapeutische Wochenschrift*, July 19, 1896) states that for the last four years he has employed potassium iodide in about 100 cases of biliary colic with considerable success. It acts most favorably in cases characterized by the frequency rather than by the severity of the attacks, and especially in subjects exhausted by loss of sleep, anorexia, and the protracted use of narcotics. Good results are often manifest in a few days, and in three or four weeks patients not infrequently consider themselves cured. In some instances the gall-bladder de-

creases in size until it is no longer palpable, but in others, although the pains may have disappeared, the organ remains distended, and doubtless still contains calculi. Although better results are observed in many instances from the use of potassium iodide than from the free exhibition of Carlsbad water, yet the author believes that the best way of securing absolute control of the disease is by using the potassium salt and the Carlsbad water alternately. He advises the patient to take five or ten grains of potassium iodide twice daily, for four or five weeks, and to follow this treatment by a course of Carlsbad water. The author states that he is doubtful whether the remedy acts by favoring the solution of the stones or by relaxing the gall-ducts and so facilitating their exit into the intestine.

Salol in Diarrhea.

Fussell (*Therapeutic Gazette*, August 15, 1896) confirms the statements which he made upon the value of salol in diarrhea, and which he published in the above journal in 1892. The conclusions arrived at in the original paper were:

(1) Opium is rarely necessary where salol is used.
(2) Salol controls the abdominal pain equally as well as opium.
(3) It is perfectly safe, having no bad after-effects.
(4) It is especially useful in the treatment of the diarrhea of children.
(5) It is of no value in dysentery.
(6) It constantly corrects the fetor of the stools.

The following mixture is suggested as the best method of administering the drug: Salol, ʒi; bismuth subnitrate, ʒii; misturæ cretæ, q.s. ad fʒiij.—M. Sig.—Two drachms every one or two hours until relieved.

To the above conclusions the writer adds that in the diarrhea of typhoid fever salol acts almost as a specific, and that it has also a favorable action on the annoying diarrhea which accompanies tuberculosis, either with or without a tuberculous enteritis. The sixth conclusion in the original paper is corrected. "The mixture will certainly *not* control the attacks of dysentery," says the author, "but the fetor of the stool and the general abdominal distress are greatly relieved by its administration, and I always use it in my cases in powder form, with bismuth in large doses."

No untoward effects were ever encountered, and although the urine was repeatedly examined, it did not contain casts or albumin in a single instance.

On Mechanical Support of the Lung in Phthisis.

Tidey (*British Medical Journal*, March 21, 1896) says, "Two clinical considerations lend weight to the argument in favor of strapping the chest in phthisis,—namely (1) the fact that pleuritic effusion frequently leads to amelioration of the lung affection in phthisis; (2) the fact that during pregnancy the course of phthisis is often temporarily arrested. Both these phenomena produce similar effects on the lung to that produced by strapping." His method is to apply the anterior end of the strap over the lower sternum and direct the patient to breathe out while he draws the strap round the lower thorax and fixes it to the vertebral column. He uses either strips of strapping or a suitable-sized (fourteen inches by five inches) piece of chamois leather spread with plaster, an appliance which adapts itself well to the chest wall without giving rise to discomfort. The appliance should be kept on till all signs of disease have disappeared and healing is complete. He directs the patient to take a moderate amount of regular exercise and to practise deep breath-

ing. The exercise and deep breathing tend to bring into play all portions of lung not habitually active, while the strapping directs healthy lung to encroach on the diseased region.

The immediate effects of the strapping in the experience of the writer are decrease of cough and expectoration, followed by cessation of night-sweats, gradual fall of temperature, and improvement of general symptoms. The effect on the physical sign is to show a dislocation upward of the seat of the lesion, with gradually decreasing evidences of disease, an encroachment of abdominal organs towards the thoracic cavity, and an absence of falling in of the upper chest wall.

The advantages are as follows: In early phthisis, to give comparative rest and relaxation to affected lung-tissue. In the stage of consolidation, to secure the same results, thereby limiting the risk of extension; to promote elimination of the diseased products by improving the circulation in and about the diseased area, and to facilitate expectoration. In the stage of cavitation, to promote closing of the cavities by directing healthy lung to encroach on the diseased area instead of relying on natural processes of cicatrization. Diminished tendency to hemorrhage, by reduced tension on vessels and cicatricial traction on vessel walls. The ultimate object is to obtain a smaller thoracic cavity filled with healthy lung, instead of an enlarged thoracic cavity filled with diseased lung.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

Fetus Papyraceus.

Bäcker (*Centralblatt für Gynäkologie*, No. 28, 1896) reports the following case of fetus papyraceus. The mother, a 28-year-old primipara, was delivered at term of a well-developed female child, weighing six pounds twelve ounces, and measuring nearly nineteen inches in length. On the placenta was the chorion, which was found to contain a second amniotic cavity holding a fetus papyraceus. This blighted embryo had reached about the second month of development. Bäcker has preserved the membranes and placenta with fetus in a 4-per-cent. formaldehyde solution, in which they remain perfect, without shrinking or becoming opaque.

On the Presentation of the Head and the Mechanism of its Engagement.

Dr. R. de Seigneux (*Revue médecine de la Suisse Romande*, May and June, 1896) reports the results of a series of observations which he has made at the suggestion of Dr. Bumm. The position and movements of the head during its passage through the brim were carefully watched in eighty cases. In forty-three of the cases the posterior parietal bone presented, the sagittal suture lying nearer to the

symphysis than to the promontory of the sacrum. Although this does not fully bear out the wide generalization of Pinard and Varnier, it shows that the presentation of the posterior parietal is infinitely commoner than was generally believed. Among these forty-three cases the pelves were all normal except five, and these only exhibited a moderate amount of contraction. The presentation was found to be synclitic in nineteen cases, and during the descent the circumference of the head remained parallel to the plane of the pelvic cavity until the floor of the pelvis was reached. The anterior parietal bone presented only eighteen times, although this is the presentation which Naegele and his followers regarded as the usual one in both normal and contracted pelves. At the outlet of the pelvis it should be noticed that in all cases, irrespective of the original method of presentation, if rotation has not already occurred, the head is inclined so that the anterior parietal presents. This fact was long ago pointed out by Matthews Duncan. De Seigneux's observations show that the head may present at the brim in three different ways without leading to any difficulty in its passage through the brim. The nature of the pelvis has no influence on the kind of presentation, but this appears largely to depend on the inclination of the uterus to the plane of the brim. Thus, in primiparæ in whom the abdominal walls are firm and elastic, the axis of the uterine cavity lies behind the axis of the pelvic brim, and therefore the head presents by its posterior parietal bone, whereas in multiparæ, when the laxity of the abdominal walls permits the uterus to fall forward, the anterior parietal bone is the presenting part. The figures further show that when the posterior parietal bone presents, this one rides over the anterior; when the anterior parietal bone presents, it rides over the posterior. When the presentation is synclitic, and there is therefore no inclination of the head in either direction, the parietal bones do not overlap.

Five Children at a Birth.

Dr. R. H. Hibbs (*American Medico-Surgical Bulletin*, July 18, 1896) reported a case of quintuplets before the obstetrical section of the New York Academy of Medicine at their May meeting. The patient had had six children previous, and had enjoyed good health up to the time of the present pregnancy. Three months before labor her physician noted that the abdomen was unusually distended. On April 29, at about the eighth month of pregnancy, she was taken in labor. In a few minutes the membranes ruptured and a child presented by the feet and was delivered. In a few minutes more a second child presented by the head and was delivered. Fifteen minutes later the third child presented by the feet and was delivered. The fourth presented by the feet and was delivered. The fifth also presented by the feet and was delivered. All were boys. Three of them lived only a few days, and the remaining two were living in May, when the doctor saw them.

Lead-Poisoning and Habitual Abortion.

Daniel (*Journal d'Accouchement*, Liège, May 17, 1896) reports the case of a 37-year-old 18-para, who has aborted in the last sixteen pregnancies at between the fourth and the seventh months. The first child was born in 1880, and the second in April, 1882; both are grown and healthy. In 1882 the husband became a house-painter, and soon after developed lead colic, followed by paralytic symptoms. Frequently he would give up his work for months, but would be obliged to resume it for a livelihood. In 1884 the wife aborted, and fifteen abortions have followed. Her health seemed to improve during the first one or two months of pregnancy.

Suddenly she would be attacked by a nervous rigor, with a sensation of fear. In the morning the breasts would be found flaccid, and within a week the dead fetus would be expelled. The patient would feel well in a few days again. She seemed free from any of the symptoms from which her husband suffered, and had not been subject to either tubercle, syphilis, or alcoholism.

Fetus Killed by Typhoid Fever.

Etienne (*Gazette hebdomadaire de Médecine et de Chirurgie*, No. 16, 1896) records the examination of a fetus which had been aborted in the fifth month of pregnancy from an 18-year-old mother, on the twenty-ninth day after she had been seized with typhoid fever. The spleen and intestines of the child showed no signs of the disease, and the placenta was healthy. A careful culture examination of the blood from the right side of the heart and from the spleen, liver, and placenta revealed an abundance of typhoid bacilli. The fetus, Etienne believes, had died of typical acute blood-poisoning from a large dose of the bacillus before the occurrence of any local change.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

A Contribution to the Pathology and Treatment of Gonorrhea in Women.

Schultz (*Centralblatt für Gynäkology*, No. 28, 1896), during the year 1895, carefully examined 174 patients from the venereal department of the hospital for the gonococcus. The organism was sought for in the vulva, vagina, urethra cervix, uterus, duct of Bartholini's gland, and rectum. The secretion from all of these parts were stained for gonococci after the method of Bumm. From the mucous membrane of the vulva and vagina the secretion was directly taken; from the remaining parts only after thorough cleansing, in that the surrounding tissues were washed with a 1 : 1000 bichloride solution. Microscopical examination was the only method employed. Gram's method of staining was rarely necessary. The examination for gonococci was made many times in each case, once a week in the positive cases and at least three times in the negative cases. Of these 174 patients 74 were under the control of the prostitution law, and of the other 100 patients part came to the hospital of their own accord and part were sent in by the magistrate as secret prostitutes. Of these, gonococci were found in 104 patients, 64.8 per cent. prostitutes. The same examinations were carried out in the dispensary practice in 42 patients, with the result that gonococci were found twenty times. In ten children with vulvo-vaginitis gonococci were found nine times.

As regards the site of disease the results were as follows: Gonococci were found in the urethra in 78 cases; in the cervix in 81; in the vulva and vagina in 9;

in the duct of Bartholini's gland in 14; in the uterus in 7; and in the rectum in 14. Urethral and cervical gonorrhea were most frequently associated, therefore, in 55 patients. The urethra was alone affected in 22, and the cervix alone in 27. He saw granular colpitis; urethritis, in which a drop of pus could be pressed out of the urethra; and purulent cervical secretion where no gonococci could be found; but, on the other hand, he believes that often in cases where there are no clinical signs of gonorrhea gonococci are to be found. Thus he concludes that to make a diagnosis the clinical symptoms are not sufficient, but the proof is found in the presence of the gonococcus. Gonococci were found much more numerous in the urethral than in the cervical secretion, and therefore urethral gonorrhea is of greater importance; that infection most frequently takes place from the urethra The uterine secretion, removed by means of aspiration in twenty-six cases where the cervical secretion contained gonococci, showed the presence of gonococci in only 7. Tubal disease in which the tube was not thickened or a tumor formed was found in 37 cases. In 10 of these the cervical secretion contained no gonococci. It results, therefore, that where there is cervical gonorrhea or adnexa disease, gonorrhea of the uterus is not always present. As regards other micro-organisms contained in the cervical canal and uterine cavity, he agrees with the investigations of Straganoff, that the hyaline mucus of the canal and uterine cavity is free from bacteria. In the writer's opinion the treatment should be prophylactic and local. The prophylactic, that gonococci should be diligently sought for in hospital patients and particularly in prostitutes. The diagnosis of gonorrhea in prostitutes should not be made after admission to the hospital, but the prostitution law should insist upon having these women examined twice a week for the gonococcus. By this method he believes the disease would be to a great extent controlled. For the local treatment he advises a Braun syringe with the aluminum canula of the Playfair sound. The canula to be sterilized before each treatment. For cervical gonorrhea he employs intra-uterine injections, never using more than eight minims and allowing the excess to escape. The best injection, he says, is a 10 per-cent. solution of silver nitrate, with this treatment the secretions soon become hyaline, diminish in quantity, and the gonococci disappear. This intra-uterine treatment employed in 47 cases produced no symptoms in 38, was discontinued in 9, either because of pain or because the patient left the hospital. The treatment not contraindicated in chronic, but in acute inflammatory disease of the adnexa. Colic resulted very rarely, only in those cases where the external os is stenosed. In conclusion the writer states that with sufficient patience and a knowledge of the disease, gonorrhea in women, in the greater number of cases, cervical as well as uterine, can be cured, or at least so much improved that the danger of infection is reduced to a minimum.

Carcinoma of the Corpus Uteri.

Käpelli (*Dissertation*, Luzerne, 1896; *Centralblatt für Gynäkologie*, No. 29, 1896), from the investigation of fifteen cases at the University of Baseler clinic for women, comes to the following conclusions: (1) The frequency of carcinoma of the corpus uteri as compared with cervical carcinoma was 5.3 per cent.; (2) it occurs after the menopause and perhaps more frequently in unhealthy married than in single women; (3) carcinoma of the corpus uteri can be associated with myoma of the uterus or follow abortion; (4) chronic irritation and inflammatory diseases of the endometrium are as predisposing causes of carcinoma, therefore displacements of the uterus are a relatively frequent cause; (5) the hemorrhage resists treatment and is atypical; pain is present in only a few cases, but its character is pathognomonic;

(6) in a typical case it is possible, from the symptoms and clinical examination, to determine the diagnosis. An absolute diagnosis can only be gained through microscopical examination of tissue removed by the curette.

A Sympathetic Ganglion in the Human Ovary.

Winterhalter (*Archiv für Gynäkologie*, Band li) made his investigations in the Senkenberg Institute in Frankfurt. He employed Golgi's rapid method of staining. He found in the zona vasculosa a ganglion composed of cells of the same character as the sympathetic ganglion cell. The ganglions greatly covered and surrounded the vessels and entered with the vessels into the follicles. Regardless of the negative investigations of Riese, Mandl, and v. Herff, who employed the silver stain. Winterhalter is positively certain of the existence of this ganglion.

PATHOLOGY.

UNDER THE CHARGE OF

JOHN GUITÉRAS, M.D.,

ASSISTED BY

JOSEPH McFARLAND, M.D.

The Blood in Pernicious Anemia.

Cabot (*Boston Medical and Surgical Journal*, August 6, 1896), from a study of fifty cases of pernicious anemia, concludes that the points most typical in the blood of this disease are:

(1) A reduction of the number of red cells to about 1,000,000.
(2) The absence of leucocytosis.
(3) Possibly a relatively high percentage of hemoglobin in some cases.
(4) Increase in average diameter of the red cells.
(5) The presence of large numbers of polychromophilic red cells.
(6) The presence of nucleated red cells, a minority being normoblasts.
(7) The presence of myelocytes.
(8) A relatively high percentage of small lymphocytes at the expense of the polymorphonuclear cells.

Post-mortem examination in eight cases brought out nothing not already well known. Fatty degeneration and pallor of all organs was noted in all; the "tiger-lily" heart in six; pericardial and peritoneal ecchymoses were noted in four. The spleen was slightly enlarged in two; no enlargement of lymphatic glands was observed. The marrow was examined in five cases, showing in all a notably red color in the shaft of the long bones. No microscopic appearances were recorded. Complications were absent.

Gliosis in Epilepsy.

Bleuler (*Münchener medicinische Wochenschrift*, 1895, No. 33, and *British Medical Journal*) found in twenty-six brains of epileptic patients a definite hypertrophy of the bundles of neuroglia lying between the pia mater and the outermost nerve bundles. The neuroglia is increased in quantity, the fibres thickened and elongated. The greater number run parallel to the surface and transversely over

the convolutions. With low magnification, therefore, a cross section of a convolution looks as if covered by a scar which has nothing to do with the subjacent tissue. With higher powers a somewhat intimate interchange of fibres between the more superficial and deeper layers is seen to exist. The change was to be seen over the whole of the brain. The cases were all severe ones of epileptic idiocy, and were of ten to sixty years' duration. The intensity of the gliosis was not proportionate to the duration of the disease or to the degree of mental affection. The brains of fifty-four persons who had suffered from various diseases of the brain, but non-epileptic, showed for the most part not a trace of gliosis, and in the fifteen the appearances that were found were not entirely like those in epilepsy; the gliosis was only of small extent, the fibres were arranged more loosely and were less parallel, so that the tissue often presented small spaces filled occasionally by so-called amyloid bodies. The author concludes that diffuse subpial gliosis is a constantly observed condition in epileptic dementia. It is probable that the gliosis develops with the clinical picture of epilepsy. "Essential epilepsy would thereby be rendered anatomically capable of diagnosis."

Cerebral Disease and Otitis Media.

Poulsen (*Münchener medicinische Wochenschrift*, No. 24, 1896) states that in 14,580 autopsies he found forty-eight cases in which death resulted from cerebral disease secondary to otitis media. Of seventeen abscesses, twelve were in the temporal lobe, four in the cerebellum, and one in both cerebellum and occipital lobe. In sixteen cases there was thrombosis of the sinus. Brain abscess is found exclusively in chronic otitis.

Pyogenic Microbes.

Bauzet (*Thèse de Paris*, No. 200, 1896) says microbes are not indispensable to suppuration which may be caused by filtered or sterilized cultures. Koch's bacillus is pyogenic, and may cause cold or acute abscess, but a cold abscess is not necessarily tuberculosis. The streptococcus is the most common agent in acute septicemia and pyemia, and tends to produce most serious, acute, diffuse processes for phlegmonous and serous suppurations. It is in most cases the cause of those secondary infections which give peculiar gravity to certain primary general intoxications,—for example, scarlet fever. It varies much in vitality and virulence. By the presence of other bacteria it is often made more venomous. The staphylococcus is much more stable; it gives rise to septicemia or pyemia of moderate severity, to circumscribed processes in sebaceous glands and cellular or bony tissues. Secondary infection by it is seldom very serious. The pneumococcus may be the cause of suppurations—sometimes very serious—of serous membranes, the pleuræ or meninges, joints, or middle ear. Eberth's bacillus is of secondary importance in this relation, but may cause subacute periostitis without superficial lesions. The bacillus coli ranks with the streptococci and staphylococci, and may cause acute, general, or various forms of local suppuration, urinary, biliary, peri-intestinal suppuration, or salpingitis. But its suppurations are of less acute character, and are less prone to extension or to affect the general system than those caused by the pyogenic micrococci. The gonococcus is not proved to have pyogenetic properties except as regards the mucosa of the urethra, the conjunctiva, and the female genital organs.

DERMATOLOGY.

UNDER THE CHARGE OF

LOUIS A. DUHRING, M.D.,

ASSISTED BY

M. B. HARTZELL, M.D.

The Nature of Psorospermosis.

J. O. Wakelin Barratt and T. N. F. Surveyor (*Journal of Pathology and Bacteriology*, July, 1896) offer the suggestion that psorospermosis results from immature forms of higher organisms, comparable, for example, to the parasites found in the alimentary canal. The possibility of such origin is suggested by the resemblance between the so-called coccidia, from whatever source, in size, number, shape, habitat, and limited degree of development observable *in situ*, and the immature forms of many of the parasites which are found in the human organism, while in both classes of cases there is a limited degree of tissue reaction. The differences which exist between members of the first group as to size, shape, habitat, variation of habitat in different stages of development, exist also in members of the second group.

The Etiology of Acne.

Lomry (*Dermatologische Zeitschrift*, Band III, Heft 4), from a careful bacteriological examination of comedones and the pustules of acne, concludes as follows:

The staphylococcus pyogenes albus is constantly present in the pustules of acne, but this staphylococcus has a very weak virulence. It can be made as virulent, however, by passing it through the animal body, as the most virulent yellow staphylococcus, becoming at the same time yellow, and acquiring the faculty of liquefying gelatin. Besides the staphylococcus albus there are present also occasionally an yeast fungus and a bacillus, but always in small numbers. In the non-inflamed comedo there is an abundant development of microbes, the staphylococcus albus always being present, but not in such preponderance as in the acne pustule. In the comedo one observes at the beginning of the inflammatory process a microbic development intermediate between that of the pustule and that of the non-inflamed comedo. At the moment that inflammation occurs in the comedo a considerable diminution in the number of kinds of microbes occurs.

The skin of those not affected by acne is just as rich in microbic species as that of the acne patient. In the comedones and pustules which sometimes occur on those not affected by acne, the same microbes are found as in those the subjects of acne.

The presence of certain microbes is not sufficient to explain the occurrence of the malady; there must be a preparation of the soil. One cannot accept the theory of a specific cause in acne; the staphylococcus albus is seen in many other affections of the skin.

The clinical features which Unna brings forward to contrast acne with other staphylococci infections of the skin may be explained in a natural manner by the difference in the virulence of the microbes. Unna's special bacillus is only a little virulent variety of the bacterium coli.

A Promising Treatment for Leprosy.

Dr. H. Radcliffe Crocker (*Lancet*, August 8, 1896) reports two cases of leprosy in which hypodermic injections of perchloride of mercury were followed by marked improvement. He was led to employ this form of treatment by seeing the good effects which followed its use in a case of leprosy in which it was at first suspected that the symptoms might be due to syphilis, the improvement being so marked that at first the diagnosis of syphilis was supposed to be confirmed by the results of treatment; the subsequent course of the case proved it to be leprosy, however.

A Pravaz syringeful of a solution, six grains to the ounce, representing one-fifth of a grain, was injected deeply into the buttock once a week. The author thinks the results he has obtained in these two cases offer strong reasons for further trial of the remedy, which he believes acts as a germicide.

The Cause of Warts.

Schaal (*Archiv für Dermatologie und Syphilis*, Band xxxv, Heft 2) believes that warts arise from the mechanical irritation of the papillæ of the corium, caused by the entrance of a foreign body which leads to swelling of these tissues and localized increased formation of epidermis. The author believes this explanation is supported by the fact that warts occur most frequently upon uncovered parts of the body and in children in whom the skin is thin and tender and therefore easily penetrated by small foreign substances. If no bacteria capable of exciting inflammation cling to these substances they produce warts by their irritant effects upon the papillæ; if, however, pyogenic bacteria are attached to them they excite suppuration. As illustrating this mode of formation the author relates the example of a wart produced in his own person by the accidental and unnoticed introduction of a small spicule of glass.

The Pathology of Itching and its Treatment by Large Doses of Calcium Chloride.

Savill (*Lancet*, August 1, 1896), in a recent paper upon this subject, regards itching as being "always the expression – *i.e.*, the symptom or evidence—of some irritation either of the nerve endings or of the centripetal (sensory) nerve fibrils." Pruritus is either primary or secondary; with the former no eruption is present or only occurs secondarily, but the latter is accompanied or succeeded by some eruption. Secondary pruritus is characterized by the presence, in most cases, of eczema or other eruptive disorder; by a severity in proportion to the severity of the accompanying skin lesions; and by being localized more or less strictly to the area of the eruption. The occurrence of secondary pruritus is to be explained by the involvement of the terminal nerve branches in the cutaneous lesions; the explanation of primary pruritus is less easy, but it is probably dependent upon some blood change. Some of the reasons for this view are: primary pruritus is usually more or less generalized in its distribution, it varies in its intensity from hour to hour and from day to day; certain articles of food cause it or greatly increase it; in certain forms of pruritus—those attending diabetes, gout, jaundice—blood-changes are known to be present; certain drugs, such as morphine, when introduced into the blood cause itching. These considerations led the author to try large doses of calcium chloride in both primary and secondary pruritus, and with marked success. In order to be effective the remedy must be given in large doses,—not less than

twenty grains three times a day,—and larger doses often succeed when smaller ones fail. It should be given after meals, largely diluted with water. In the large number of cases in which it has been tried there have been no absolute failures.

An Unnamed Granuloma.

Tenneson, Leredde, and Martinet (*Annales de Dermatologie et de Syphiligraphie*, No. 7, 1896), in a recent paper, endeavor to show that the affection which has been described by Brocq, Barthelemy, and others under the names symmetrical disseminated folliculitis of smooth parts, acnitis, folliclis, acne varioliforme, hydradenitis destruens suppurativa, disseminated suppurative idrosadenitis, disseminated suppurative spiradenitis, does not originate in the hair-follicles, the sebaceous nor the sweat-glands; but that it is a granuloma which can invade the glands secondarily, but does not begin in them. The authors believe that the discrete form is more common than is supposed, and that it develops upon a scrofulous soil. They also believe that the malady is of microbic origin.

BOOK NOTICES.

A System of Medicine by many Writers. Edited by Thomas Clifford Allbutt, M.A., M.D., LL.D., F.R.C.P., F.R.S., F.L.S., F.S.A., Regius Professor of Physic in the University of Cambridge, etc. Vol. I. New York and London: Macmillan & Co., 1896.

Notwithstanding the inherent defects which attend the production of "systems" of medicine, there seems to be a steady demand for works of this class. In the present instance the editor has shown such rare judgment in the selection of authors, the allotment of subjects, and the arrangement of material that a review of the first volume will convince the most exacting that the completed work will rank among the foremost books of reference in the English language. There are forty-three contributors to the first volume, four of whom are Americans. In a scholarly introduction the editor offers an apology for the use of the title system, and remarks that the reader will be disappointed if he expects to find a system of medicine formally so called. "He will," he says, "rather find our knowledge set forth on the whole as immediate convenience and the exigencies of contemporary learning may dictate."

The first division of the volume is introductory in its nature, and contains the following "prolegomena:" Medical Statistics, by Dr. Billings; Anthropology and Medicine, by Dr. Beddoe; on Temperament, by Dr. Rivers; Medical Geography of Great Britain, by Mr. Haviland; Inflammation, by Dr. Adami; the Doctrine of Fever, by Dr. Burdon-Sanderson; the General Pathology of Nutrition, by Dr.

Mott; General Pathology of New Growths, by Mr. Shattock and Mr. Ballance; Principles of Drug Therapeutics, by Dr. Leech; Climate and the Treatment of Disease, by Dr. Herman Weber and Dr. Michael G. Foster; Artificial Aërotherapeutics, by Dr. Theodore Williams; Balneology and Hydrotherapeutics, by Dr. Herman Weber and Dr. Parkes Weber; the Medical Application of Electricity, by Dr. Lewis Jones: Massage, Technique, Physiology, and Therapeutic Indications, by Dr. John K. Mitchell; the General Principles of the Dietetics in Disease, by Sir Dyce Duckworth; the Diet and Therapeutics of Children, by Dr. Eustace Smith; Nursing, by Miss Amy Hughes; the Hygiene of Youth, by Dr. Dukes; and Life Assurance, by Dr. Symes Thompson. These articles are excellent in their way, but most of them are too brief to be of great value. The article on "Inflammation," by Dr. Adami, of Montreal, merits special mention. In the eighty pages at his disposal the author has given an exposition of the subject in its modern aspect that will well repay the student who masters it.

The second division is devoted to the fevers, and is divided into two parts; the first dealing with the subject of "Insolation or Sunstroke," and contributed by Sir Joseph Fayrer. The administration of five or even ten grains of quinine at intervals of three hours, which the writer recommends as an antipyretic measure, betokens a limited experience in the treatment of these cases. The second part deals with the infectious fevers, and is prefaced by an excellent monograph on the general pathology of infection by Dr. Kanthack, in which are considered the various forms of bacteria, the questions of bacterial activity in disease, infection and contagion, predisposition, immunity, and serum therapeutics; the whole being a valuable summary of what modern bacteriological research has accomplished in these promising fields. The articles on Septicemia, Pyemia, and Erysipelas are contributed by Mr. Watson Cheyne. In discussing the etiology of the last disease, the writer inclines to the view that the streptococcus of erysipelas and the streptococcus pyogenes are very closely allied species, but that they are not identical. The etiology and pathology of ulcerative endocarditis and epidemic pneumonia are fully considered in this part of the work, but the symptoms and treatment of these affections are to be discussed in a later volume. Epidemic cerebro-spinal meningitis and influenza are ably treated by Dr. Ormerod and Dr. Goodhart respectively. The article on diphtheria is divided into four sections, Dr. Thorne contributing the etiology and prophylaxis, Dr. Kanthack the bacteriology and pathology, Dr. Gee the symptomatology and treatment, and Dr. Herringham a summary of the serum treatment up to the beginning of the present year. The chapter on treatment is unfortunately disproportionately short, a little more than three pages being devoted to the subject, while nearly two of these are filled with the statistics of the serum treatment. The following statement is sufficient evidence that the author is favorably impressed with the efficacy of the antitoxin treatment: "Most physicians agree that under this treatment the local symptoms clear up with much greater rapidity than of old. That the disease is also robbed of its power on the constitution is proved partly by the great fall in the

death-rate and partly by clinical observation." The article on tetanus is also divided, Dr. Woodhead being responsible for the section on pathology, and Sir George Humphry for the description of the clinical aspect of the disease. A thoroughly satisfactory article on enteric fever is contributed by Dr. Dreschfeld. The use of the cold bath is commended. "There can be little doubt," says the author, "that whenever this treatment can be applied it is far preferable to antipyretic treatment by drugs." Cholera is discussed by Mr. Ernest Hart, Dr. MacLeod, Dr. S. C. Smith, Dr. Kanthack, and Mr. J. W. W. Stephens; the plague, by Dr. J. F. Payne; and relapsing fever by Dr. Rabagliati and Dr. Wesbrook. At the close of each article there is a selected list of references which naturally adds to the usefulness of the work.

Unfortunately in the space at his disposal the reviewer is unable to present more than a brief outline of this meritorious work, which is commended heartily to practitioners and students as a system of medicine thoroughly comprehensive, yet concise in statement, and withal elegant in diction.

A Manual of Syphilis and the Venereal Diseases. By James Nevins Hyde, A.M., M.D., Professor of Skin and Venereal Diseases, Rush Medical College, etc., and Frank H. Montgomery, M.D., Lecturer on Dermatology and Genito-Urinary Diseases, Rush Medical College, Chicago. Philadelphia: W. B. Saunders, 1895.

This work is said in the preface to have been written for the student and practitioner rather than for the expert, and with this purpose in view the object of the authors seems to have been accomplished. The subjects are discussed in a conversational manner, free from technicalities and from a modern point of view. After a brief introduction the subject of syphilis is introduced. Beginning with acquired syphilis, which is followed from the time of infection through its many phases as it affects the different organs of the body, and ending with hereditary syphilis, treatment of syphilis, and acquired infantile syphilis, the ground has been very satisfactorily covered. The chapter on treatment begins with the significant sentence, "No treatment of syphilis may be regarded as worth the name that excludes early and persistent attention to the general health of the patient." This cannot be too often repeated. The want of this care is responsible for more failures than is the improper administration of drugs. In common with most American and French physicians, the authors express a preference for the protiodide of mercury in the management of the early stages of the disease. The rule for determining the proper dose in each case could have been stated more explicitly with advantage. It is a point of extreme importance, and, in instructing students and physicians who rarely treat the disease, cannot be too definitely stated. The treatment recommended is, however, in accord with the most advanced views on the subject. The

important distinction is drawn between hereditary and acquired infantile syphilis. A chapter on "syphilis in relation with the family and society" is added.

Under the title "Hypochondriasis" are discussed the numerous morbid mental states produced by real or imaginary venereal disease. This chapter will be of especial value to students and those who meet with such cases but infrequently, and who would therefore be apt to be misled by fancied complaints.

The sections on gonorrhea and its complications and sequelæ are in line with modern views on these subjects. Dr. Otis's scale of the relation of the calibre of the urethra to the diameter of the flaccid penis is reduced by the authors from four to eight sizes.

No attempt has been made to settle points in dispute, but the accepted teachings have been presented in a form well suited to the class of readers for whom the book was intended. A number of cuts and colored plates enrich the text. The printing and binding are both creditable.

New Truths in Ophthalmology, as developed by G. C. Savage, M.D., Professor of Ophthalmology in the Medical Department of the Vanderbilt University; ex-President of the Nashville Academy of Medicine, etc. Third edition, small 8vo, pp. 270. Published by the author. Printed at the publishing house of the M. E. Church, South Nashville, Tenn., 1896.

That this little book has aroused sufficient interest to help modify the ordinary methods for the diagnosis of disturbances in the extra-ocular muscles must give genuine pleasure to its scientific author. Not that all of the theories advanced in it can be received with certainty, or that all of the assertions can be proved by experiment, but without cavil and without bias, it must be conceded that "New Truths" (better "Old Truths") have developed ophthalmology not a little and made this branch of medicine a distinct gainer in knowledge and method.

A Treatise on Nervous and Mental Diseases, for Students and Practitioners of Medicine. By Landon Carter Gray, A.M., M.D., Second Edition, Revised and Enlarged, with 172 Illustrations and Three Colored Plates. New York and Philadelphia: Lea Brothers & Co., 1895.

The appearance of the second edition of this work so soon after the first, less than three years, is sufficient guarantee of its merit. If the first edition was good the second is better. The book has been thoroughly revised and brought up to date. The anatomical introduction is especially good, if anything it is too exhaustive, the former views upon the anatomy and histology of the nervous system being described and illustrated as thoroughly as those at present held which it seems to us is apt to confuse a student.

Five new chapters have been added,—*i.e.*, on Massage, Dementia, Dementia Paranoides, Confusional Insanity, and Delirium. We cannot agree with the author's view of confusional insanity. Commencing senile dementia it seems to us would more nearly fit the description and illustrative case that he gives of that condition.

Therapeutics, so often neglected in works upon nervous diseases, constitutes one of the strongest features of the book. A number of new illustrations have been added. The typography and artistic excellence of the illustrations are of the highest order. We can recommend the work to any desiring a thorough, practical, and readable book upon nervous and mental diseases.

Diagnosis and Treatment of Diseases of the Rectum, Anus, and Contiguous Textures. Designed for Practitioners and Students. By S. G. Gant, M.D., Professor of Diseases of the Rectum and Anus, University and Woman's Medical Colleges, etc. With two chapters on "Cancer" and "Colotomy," by Herbert William Allingham, F.R.C.S. Eng., Surgeon to the Great Northern Hospital; Assistant Surgeon to St. Mark's Hospital for Diseases of the Rectum, etc., London. Philadelphia: The F. A. Davis Co., 1896.

In this work of 399 pages the author describes the diseases of the rectum and anus and allied conditions in a practical manner. He writes from experience rather than from theory, and he has condensed the subject as much as possible.

After the usual space devoted to anatomy and physiology, a chapter on "symptomatology" gives the various symptoms encountered in the diseases included in this work. Under each is mentioned the conditions in which it appears and the special characteristics by which its significance may be interpreted.

In the treatment of the various conditions described, the author follows the methods which experience has shown to give the best results.

The chapters on "Cancer of the Rectum" and "Colotomy," by Herbert William Allingham, represent authoritative teachings on these subjects.

The book is well illustrated, a number of the plates being in colors. The press work and binding have been well executed.

As these pages go to press, we learn that Dr. James Tyson's work on the "Practice of Medicine" is ready for delivery.

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NOVEMBER, 1896.

SYMPTOMS AND DIAGNOSIS OF PUERPERAL INFECTION.

By Barton Cooke Hirst, M.D.,
Philadelphia,
Professor of Obstetrics, University of Pennsylvania.

The symptoms of puerperal infection are local and general. The latter are an elevated temperature, preceded perhaps by a chill, a rapid pulse and profound physical depression with the development in some cases of metastatic inflammations of any of the organs or tissues in the body. The tongue is coated, the breath is heavy. There is a disinclination to take food. There may be excessive thirst. Nausea and vomiting are not uncommon, and a septic diarrhea appears in the worst cases. There may be blotches of scarlatiniform eruption upon the skin.

The local symptoms of septic infection are a foul discharge, spots of ulceration and false membrane formation along the lower genital canal, edema of the vulva, and possibly pelvic peritonitis with an exudate. Or there may be other inflammatory affections of the generative organs, such as superficial catarrhal colpitis, or ulcerative metritis, the symptoms of which will be described in their appropriate places. It is not likely that any case of puerperal sepsis will present all the symptoms just detailed. Elevation of temperature and rapid pulse alone after labor should be regarded as indicative of puerperal infection, if no other cause for them can be demonstrated.

It is possible to have fever only as a symptom of puerperal infection in the early part of the puerperium, during which time the influences that normally reduce the pulse-rate are so active as to counteract the disposition to rapidity of pulse usually shown in

septic infection. The slow pulse, however, will not continue long. At the end usually of thirty-six hours, rapid heart action will appear.

It may be impossible to make a differential diagnosis between septic fever and some of the other causes of elevated temperature after labor. In these cases it is wise to treat the patient for puerperal sepsis by a thorough disinfection of the parturient tract, while at the same time the bowels are well evacuated and a full dose of quinine is administered to dispose of a possible intestinal toxemia and to combat a possible malarial infection which in this part of the country, especially in the spring and fall, is a not improbable event. A microscopic examination of the blood is advisable in a doubtful case, to discover the leucocytosis of sepsis or the protozoa of malaria.

Any elevation of temperature after delivery calls for the most careful investigation. A *vaginal examination* should be made, both digitally and with the speculum. A combined examination should be made to detect the following conditions: arrested involution and fixation of the womb, bogginess and excessive tenderness of the uterine walls, enlargement of the tubes, enlargement, fixation, and displacement of the ovaries, edema or exudate in the pelvic connective tissue, and thromboses in the pelvic veins. The abdomen should be carefully palpated for tenderness and exudate; the character and odor of the lochia must be observed; in short, the woman's condition should be thoroughly studied to eliminate or to discover some other cause for fever than an infection of the birth-canal.

Preventive Treatment of Puerperal Sepsis.

It is convenient to deal separately with the several sources of puerperal infection in describing the preventive treatment.

Atmosphere.—While the air is not such a frequent source of infection as it was thought to be in the beginning of the antiseptic era, it is undeniable that an atmosphere which is stagnant, deprived of sunlight, impregnated with dust, tainted with foul odors and mephitic gases, not only may contain disease-germs and spores in larger proportion than it should, but also has a most depressing effect upon an individual subjected to its influences, reducing the vitality and resisting power of that individual until there occurs perhaps microbic invasion of the system that would have been successfully resisted had the body-cells preserved their normal combatative power against pathogenic bacteria. The lying-in room, therefore, should be sunny; should be well ventilated,—best by an open fire-place,—and it should not possess a stationary wash-stand or any other connection with the sewer; nor should it be too near the bath-room and water-closet. If

there is a stationary wash-stand in the room its outlet should be kept stopped, water should be allowed to stand in it, and the overflow holes should be plugged with small corks or putty. If the bath-room immediately adjoins the lying-in room, the door between should be stripped.

If the room is heated by a hot-air furnace, the intake for the air and the sanitary condition of the cellar may need investigation. The nurse should be cautioned not to leave trays of food, an unemptied bed-pan or a commode in the room over night or for any length of time. An antiseptic vulvar pad should be worn during the continuance of the lochial discharge so as to protect the genital orifice from contact with the atmosphere, and the materials of which this pad is composed, or rather the antiseptics with which it is impregnated, should be chosen with a view of keeping the bloody discharge from decomposing should it soak through the pad, and thus be exposed to atmospheric contamination. The best materials for this purpose in my experience are salicylated cotton and carbolized gauze.

Water.—The water used for douches, if they are employed, or for washing off the vulva and perineum may be the source of fatal infection. All the water used about a puerpera should be boiled beforehand for at least half an hour. It is not sufficient to make a germicidic solution, as, for example, of corrosive sublimate, in the belief that all germs in the water are killed by the antiseptic employed. Tetanus bacilli will live for hours in a 1 : 4000 bichloride of mercury solution and the other antiseptics usually employed in obstetric practice,—lysol, kresin, creolin may be perfectly inert against many dangerous pathogenic germs during the time that usually intervenes between the preparation of an antiseptic solution and its use upon a patient. I have seen three women contract tetanus from intra-uterine douches of unboiled water (creolin 2 per cent.) during a time when the water of Philadelphia was unusually turbid in consequence of freshets in the Schuylkill Valley.

The Patient.—The parturient and puerperal woman may be infected by disease-germs carried upon her person, especially in the pubic region ; by her personal clothing, by the bedclothing and mattress, by the vulvar pads, and the pads upon which the buttocks rest, by the material used to wash off the vulva and perineum, and especially by pathogenic bacteria lodged in the vaginal or uterine mucous membranes before labor or even prior to conception.

To insure the greatest obtainable degree of personal cleanliness, the woman falling in labor should be given a full bath, special attention being paid to scrubbing the genital region most thoroughly with soap, hot water, and a soft-bristle brush or a wash-rag. After the

bath the woman should put on clean clothes throughout. The mattress on her bed should not be soiled by the discharges of previous labors, by urine, feces, or other putrescible matter. It should not have been used in any case of contagious or infectious disease, and it should be protected by a rubber cloth that has been carefully scrubbed clean. The bedclothing should be clean, the bed being freshly made up for the labor. The pads on which the buttocks rest during labor and afterwards should be made of nursery cloth, prepared in the way described in my directions to the nurse (boiled and dried). It is scarcely necessary to say that a pad when soiled should be thrown away and not used again. The vulvar pads should be made of carbolized gauze and salicylated cotton, the best materials for disinfecting a bloody discharge. The nurse should make them up with sterile hands as they are required, or, if she makes a number at a time, they should be wrapped in a clean towel and taken out for use with sterile hands. The material used to wipe off the genital orifice, the mouth of the urethra, and the perineum should be absorbent cotton soaked in a 1 : 1000 solution of sublimate for at least a half hour before its use. During the second stage of labor these pledgets of cotton are employed to wipe away feces as it emerges from the anus, always in the direction from before backward.

Care must be exercised to remove blood and blood clots from the vulva before putrefaction sets in. This is best done by placing the woman on a bed-pan, letting a stream of boiled water run over the parts, and, if necessary, using cotton to wipe them off. This should be done about six times in the twenty-four hours for the first four or five days, and then two or three times a day until the discharge ceases.

A careful examination should be made of every woman's vaginal discharges in the beginning of labor. If there is leucorrhea or any pathological condition of the vaginal secretions, the vagina should be thoroughly scrubbed out with tincture of green soap, hot water, and pledgets of cotton, and should then be douched with a bichloride-of-mercury solution 1 : 2000, a little clear water being employed at the end of the douche to wash out any residual sublimate solution that might poison the patient, or do harm to the infant's eyes in its descent through the birth-canal.

It should be borne in mind, in the conduct of the labor, that excessive bruising, long-continued pressure of the maternal tissues, extensive injuries, all conduce to microbic invasion of the parts by reducing their vitality and by affording, through solutions of continuity, a ready entrance into the system. The proper conduct of labor, therefore, is an extremely important item in the preventive treatment of puerperal sepsis.

Finally, in the management of the third stage of labor and of the early puerperium the greatest care should be exercised to evacuate the uterine cavity of all putrescible matter and to secure as far as possible firm contraction of the womb. The presence of dead foreign matter within the uterine cavity will pretty surely attract saprophytes, and an imperfect involution of the womb will favor the direct invasion of the uterine sinuses and blood-channels by micro-organisms, and the absorption of the products of microbic activity into the circulation and into the lymph-spaces.

The Physician.—The physician should not carry infectious germs upon his person or clothing into the lying-in chamber, and he should be scrupulously careful not to insert pathogenic germs into the woman's vagina in the course of his examinations. If a general practitioner is in attendance upon infectious and contagious diseases, he should either give up obstetric practice entirely, or, if he cannot do so, he should take a full bath and should change his clothing completely before attending a woman in labor.

It is a wise precaution to carry in one's obstetric bag a long linen gown, or a pair of duck trousers and a cheviot shirt. The change of clothing should be made in another room before seeing the patient at all, or at any rate before making an examination.

In the preparation of his hands for an examination the method recommended by Fürbringer is to be preferred. This consists in a ten-minutes scrubbing of the hands with a nail-brush, hot water, and tincture of green soap, followed by a most thorough scrubbing with alcohol, and this followed by immersion of the hands in a 1 : 1000 bichloride-of-mercury solution for at least two minutes. The examining finger should then be anointed with carbolized vaseline (5 per cent.), and in making the examination the vulvar orifice should be exposed by lifting up the upper buttock as the woman lies upon her side so that the finger can be inserted directly into the vagina without becoming contaminated by being swept over the skin near the anus or pubes while searching for the vulvar orifice. As every examination entails upon the woman some risk of infection, the examinations should be limited in number as much as possible. The best results ever obtained in obstetrical practice as regards both morbidity and mortality have been secured by an almost entire elimination of the vaginal examination, which has been replaced in the practice of some enthusiasts by abdominal palpation, and even by rectal examinations. It is unnecessary, however, and is moreover inadvisable, to give up the vaginal examination altogether. Much may be learned by abdominal palpation, so that there is little necessary information to be gained by examining *per vaginam*, but there are some conditions

that can be learned in no other way. A few vaginal examinations in the course of labor are therefore indispensable. No harm is done by these examinations if their number is restricted, and if sufficient care is exercised to secure perfect cleanliness of the examining hand, and to conduct the examination in the way described above.

Nurse.—The nurse should adopt the same precautions in regard to personal cleanliness that have been recommended for the physician. She should not have come from a contagious or infectious case. She should put on fresh clothing throughout for attendance upon the obstetrical patient. She must take a full bath, scrubbing her hair and scalp well with soap and water, and rinsing her hair in a 1 : 1000 sublimate solution, which is then washed off with pure water. Her hands should be carefully prepared according to the method above described before any manipulation of a patient's genital region or of her breasts. It would be her duty, also, in the care of a puerpera to enforce the sanitary and aseptic regulations described already under their appropriate heads.

Implements.—All implements to be used about the person of the parturient and puerperal woman should be boiled for at least five minutes. In the case of a few articles that might be injured by boiling water, a bichloride solution 1 : 1000 should be employed for their disinfection, a full half hour at least being allowed for the immersion, and the bichloride solution being made up with boiled water.

The Curative Treatment of Puerperal Infection.

The treatment of puerperal sepsis is both local and general. Locally, a thorough disinfection of the whole genital canal is called for in every case of puerperal infection. It may appear unnecessary, and may prove on actual experience to be even harmful, but no one can tell beforehand how necessary this procedure will be. In the vast majority of cases it will be productive of the greatest good. It is only occasionally useless and very rarely actually harmful. It should, as already stated, invariably precede all other treatment for puerperal infection. The method of disinfecting the genital canal may be described as follows : A double tenaculum, a large, dull curette, a placental forceps, and an intra-uterine catheter are boiled for fifteen minutes. The operator disinfects his hands and arms. The patient is placed in the dorsal posture across the bed, with her buttocks resting on a rubber pad. The external genitalia and the vagina are scrubbed with tincture of green soap in hot water and pledgets of cotton ; the vagina is douched with a sublimate solution, 1 : 2000. The operator then seizes the anterior lip of the cervix with the tenaculum. An intra-uterine douche, sublimate solution, 1 : 2000, at least a quart is administered. Then with

the curette and the placental forceps in turn the uterine walls are gone over thoroughly in all directions, six to twelve times, till nothing is brought away but bright blood; a second intra-uterine douche concludes the treatment.

If the womb is flabby and large, with a tendency to flexion, so that the drainage of the uterine cavity is not good, I would recommend packing the cavity with iodoform gauze. I have found it of advantage in the majority of cases to pump into the uterine cavity by means of a Davidson's syringe and a two-way catheter a mixture of two drachms of iodoform, and two ounces of sweet oil.

In addition to cleansing the uterine cavity in the manner described, the operator should take the opportunity of carefully inspecting the visible portion of the parturient tract, and if on the cervix or in the vagina there are false membranes or areas of inflammation and localized infection, these should be carefully treated; best by the application of a strong solution of nitrate of silver, a drachm to the ounce.

It may be necessary to repeat the intra-uterine douches several times, in fact, several times a day for many days; in this case plain water only should be used. Nothing is gained whatever by the employment of strong chemical disinfectants which cannot always reach and destroy the infecting micro-organisms of the genital tract, but which do have a most depressing action upon the body-cells of the walls of that tract, reducing their resisting power against the invasion of attacking bacteria.

It is rarely necessary to repeat the curettement or the use of the placental forceps. It may be advisable to provide drainage from the uterine cavity by the insertion of a strip of gauze to the fundus. This is only necessary, however, in those cases of flabby, relaxed wombs which fall forward on themselves in such a manner as to prevent the free exit of the lochial discharge.

The general treatment is stimulating. The patient should have as much food of an easily digestible character, chiefly milk, as she can digest, and as much alcohol as she can consume without showing the physiological effects of it. Digitalis will be useful as long as the pulse is above 110. Strychnine may be combined with it in suitable cases. To tide the patient over emergencies, carbonate of ammonia in large doses by the bowel, and nitro-glycerin hypodermically may be required. Inhalations of oxygen may be of service. Absolute rest and freedom from all disturbances, mental and physical, must be insisted upon, and the patient should be given the best nursing that the family can afford.

The Serumtherapy of Puerperal Sepsis.—Stimulated by the suc-

cess of this treatment in diphtheria, and in a few other infectious diseases, an effort has been made in quite recent times to procure a serum that will be antagonistic to streptococci and antidotal to the products of their activity.

Richel et Héricourt[1] suggested some eight years ago the use of serum taken from animals "vaccinated" with a septic micro-organism in order to secure immunity in other animals. Many enthusiastic investigators have recently worked in this same field, especially in France; but it will be conceded, I think, that Marmorek's work has commanded the greatest respect and the most attention, and it will not be unfair, therefore, to judge the merits of the serumtherapy of puerperal sepsis by the results achieved with Marmorek's products.

Marmorek[2] points out that there are two ways of immunizing animals. One is to take culture media with the microbes destroyed or removed, and containing only the toxins of streptococcus activity. The other is to inject the streptococci themselves into the animal which is to be made immune. The latter is much the more reliable method.

Marmorek was able to immunize horses, asses, sheep, and mules by injecting exceedingly virulent streptococci cultures in increasing doses during a period of six to ten months. Taking the serum from the animals at least four weeks after the subsidence of all the symptoms in the reaction following the last inoculation, Marmorek found that $\frac{1}{7000}$ part of a guinea-pig's weight in serum was sufficient to protect it against ten times the dose of virulent streptococci which would be fatal in animals unprotected.

But he admits that there may be a streptococcus infection so virulent that no antidote is of avail, and also that if the antistreptococcic serum is employed late after the primary infection, the progress of septic inflammation cannot be stayed.

Moreover, the antistreptococcic serum has no antagonistic power over the other micro-organisms of puerperal sepsis, so that the quite common cases of mixed infection in which the colon bacillus, the bacillus fetidus, the bacillus pyocyaneus, and the pyogenic staphylococci are active may not be benefited in the least by the antistreptococcic serum.

Marmorek reports fifteen cases of streptococcus infection in puerperal women in which the serum was employed. In seven of these there was a pure streptococcus infection. This series had no mortality.

[1] Comptes Rendus de l'Académie des Sciences, 1888, p. 690.

[2] Le Streptocoque et le Serum antistreptococcique Alexandre; Marmorek, Annales de l'Institute Pasteur, T. IX, July, 1895, p. 593.

In three cases the colon bacillus was associated with the streptococci. All these women died. In five cases pathogenic staphylococci were associated with streptococci. In this number there were two deaths.

Gaulard[1] reports two cases of puerperal fever treated by serum. A rickety woman with a contracted pelvis had a protracted labor. The case was one of face presentation. The perineum was torn to the anus, but was sutured at once. One week after delivery the temperature rose to 105° F., and remained at that height for three or four days. Gaulard saw her four days later, when the pulse was 140 and irregular, and diarrhea was present. The perineal wound was discharging pus, and on the vagina there were some sloughs. The uterus was curetted, nothing, however, of importance coming away. Subsequently the uterus was packed with iodoform gauze and the perineum resutured. The next day the temperature fell to 102.7° F., but on the second day it rose again, and her general condition became serious. At this time ten cubic centimetres of Marmorek's antistreptococcic serum were injected into the abdominal wall. The temperature fell slightly on the following day, and a second injection of two cubic centimetres was given. From this time the temperature fell steadily, and the patient made a speedy recovery.

The second case was also a rickety woman. It was her fourth pregnancy. The first labor was natural; in the two others delivery was effected by forceps. The antero-posterior diameter of pelvis was three and a quarter inches. As an unsuccessful attempt had been made outside of the hospital to apply the forceps, a basiotripsy was performed, delivery effected, and a douche of 1 in 4000 bichloride of mercury given. The temperature rose rapidly, and two days after delivery it had risen to 104° F. The uterus was swabbed out with creosoted glycerin, some putrid fragments coming away, and plugged with iodoform gauze. On the fourth day ten cubic centimetres of antistreptococcic serum were injected, and repeated on the fifth and sixth days. After the third injection the temperature fell to 102.9° F. Another injection was now given and the temperature fell to 101.5° F., reaching the normal on the eleventh day after delivery. While the temperature was falling, she was seized with bilious vomiting and meteorism, the pulse remaining as before, about 120. The vomiting became uncontrollable; she became comatose, and died on the thirteenth day. Gaulard believes that the serum was the cause of the vomiting. He fears that too much serum was injected, for at the autopsy there was no sign of suppuration or of peritonitis. The question of the maximum dose of the serum has yet to be deter-

[1] Presse Médicale, November 30, 1895.

mined. Gaulard is of the opinion that the serum does not do away with the necessity of using the curette, but if the germs have already entered the blood, it may be employed against them and their toxins.

Quite recently Bar and Tissier[1] have reported further experiences with the treatment of puerperal infection by antistreptococcic serum. They report in a preliminary announcement the treatment of ten cases of streptococcus infection by the antistreptococcic serum. Of this number five died and five recovered. Those that ended in recovery were comparatively light, and one would expect a good result in such cases from the older plans of treatment. They were, moreover, all treated with intra-uterine irrigations, which seems to me to have had more to do with their recovery than the serum injections.

Among the fatal cases was one that received the first serum injection three-quarters of an hour after labor, and another in which the patient died apparently from toxemia after the symptoms of the streptococcus injection had subsided.

One cannot avoid the thought in reading the history of this case that the serum was the cause of death rather than the original disease. Its clinical features resembled closely those of Gaulard's fatal case.

After an earnest study of this subject, for it is of transcendent importance to a man engaged in work like mine, it seems to me that our judgment on the serumtherapy of streptococcus infection must run as follows in the light of our present knowledge: It requires a long time, and especially virulent inoculations, to obtain a serum with antitoxic and germicidal properties. It should be prepared, therefore, with great care, and should be obtained from a thoroughly reliable source. There is a possibility that this serum may contain dangerous toxins and that the treatment may be more dangerous than the disease. There is a streptococcic infection so virulent that the antitoxin will be of no avail, no matter how strong it may be. There is an undeterminable time in streptococcic infections when the serum will be used too late. The antistreptococcic serum has no antagonistic power over other pathogenic micro-organisms. It is not easy to determine during life whether the infection is pure or mixed, though the majority of puerperal infections are due to streptococci. Therefore, the use of the serum must be more or less empirical. Finally, the clinical results of the serumtherapy for puerperal infection have not been as yet at all encouraging.

The Treatment of Septic Infection by the Artificial Production of

[1] Faits pour servir a l'Histoire du traitement de l'Infection puerpérale par les Serum antistreptococciques, L'Obstétrique, 1, March, 1896, p. 97.

a Hyperleucocytosis.—A large and influential school of pathologists regard phagocytosis as the agency by which an infectious disease is spontaneously cured. It is logical, therefore, in those holding this belief to attempt the treatment of septic infection by stimulating the production of white blood-corpuscles that shall serve as phagocytes. There are several agents administered internally that have leucotaxic powers, such as pilocarpine, albumose, and nuclein. The first, however, is not advisable in sepsis on account of its depressing action.

Hofbauer,[1] from Schauta's clinic in Vienna, reports the results of employing Horbaczewski's nuclein in seven cases of puerperal infection. The cures effected in some of these cases certainly warrant a further trial of the method. To my mind, this plan of treatment gives greater promise of practical results than does the serum-therapy.

DESCRIPTION OF A SUCCESSFUL OPERATION FOR BLEPHAROPLASTY, EMBRACING THE OUTER HALVES OF BOTH THE UPPER AND THE LOWER LIDS BY A SINGLE SPLIT FLAP TAKEN FROM THE FOREHEAD FOR EPITHELIOMA.[2]

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During my fall, 1895, term of service in the eye-wards at the Philadelphia Hospital, A. K., a 66-year-old hostler, was admitted. He gave the following history: In May, 1864, during the last day of the battle of the Wilderness, in Virginia, between the Federal and the Confederate forces, he was struck at the outer angle of the right eye by a small piece of shell. From this wound, that never entirely healed, a growth, which slowly but steadily increased in size until both of the lids became involved, developed. This finally assumed a malignant type and presented exuberant granulations, which were painful, irregular in outline, and showed no tendency to heal.

The family history was negative. For the past three years the

[1] Centralblatt für Gynäkologie, No. 17, 1896, p. 441.

[2] Paper read before the 1896 meeting of the American Ophthalmological Society.

patient had had a chronic diarrhea, the stools being thin and liquid, and averaging six to twenty a day.

The growth, which was epitheliomatous in character, occupied the outer halves of both the upper and the lower lids, and extended laterally to some six or seven millimetres beyond the supposed position of the external canthus. Its oldest and densest portion seemed to be to the outer side. It bridged across the palpebral fissure without apparently reducing the commissural width. A probe could be readily passed beneath the growth into the conjunctival cul-de-sac, showing that the mucus membrane was undisturbed and untouched.

The eyeball itself, which was uninjured in any way, performed its functions normally for age and refractive condition.

There being no contraindications, on October 10, 1895, while the patient was under the general anesthetic effects of ether, and with the kind assistance of my friend, Dr. George C. Harlan, and my resident surgeon, William H. King, and in the presence of my colleague, Dr. George E. de Schweinitz, I made the following operation for the growth and the filling in of the bared surface with the adjacent sound skin.

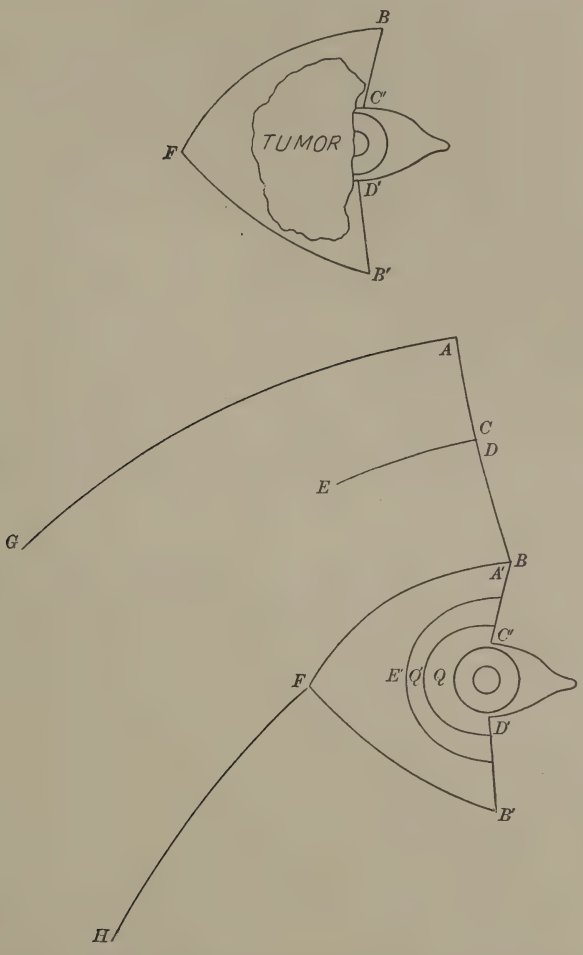
As shown in the accompanying outline sketch, the area designated as "tumor," and which represents the position and the shape of the growth, was excised in the triangle *F B C' D' B'*. During this procedure care was taken to save every portion of the underlying conjunctiva. This was accomplished by dissecting the mucus membrane free from the inner edge of the ciliary border of the outer halves of the lids by a series of carefully-made incisions carried along the junction of the mucus membrane and the skin of the lids.

This done, a large, irregular, triangular area, as shown in the second sketch was obtained. Embraced in the central portion of the inner thirds of this area there was a large quadrate flap of conjunctiva, which represented the entire mucus membrane surface of both the globe and the lids to the temporal side of the cornea, the bulbar portion being still adherent to the submucus tissues of the globe.

The bared surface was freed from all shreds of tissue and masses of fat. Capillary oozing was checked by the moderate employment of hot stupes.

A large-sized flap made of a height at its inner aspect equal to the base of the denuded triangular area was formed at *G A A' F H*. This was dissected loose, leaving the broad and well-nourished base *G H*. The tissues beneath *H F B'* were next dissected sufficiently to make the overlying area freely mobile. The large upper flap was slid into position, and the border *F B* was attached to *F B'* by a series of sutures which were so inclined as to bring the

two edges neatly together. The slit *C E D* was cut and the lower border *E D* was stitched to the conjunctival flap, which now ran from *E'* to *D'*, thus making a ciliary border in the new outer half of the lower lid. The external canthus was next formed by a similar stitch placed in the new external angle. The ciliary border of the new half of the upper lid was made in a similar way, attaching



the upper border of the split *E C* in the flap to the conjunctival border *E' C'*. The rest of the large flap was set into position, and the open triangular area in the forehead was reduced to a minimum by a number of fine superficial sutures. The tissues beneath the forehead were loosened so as to allow the skin of the forehead in the region of the operation to cover as much of the exposed surface as possible.

The reproduction of the general photograph shows the position and size of the surface that was left to heal by granulation.

The field of operation was cleaned, dusted with powdered iodoform, covered with a large square of antiseptic gauze, and protected by several turns of a narrow gauze bandage.

The first dressing, which was made in two days' time, consisted as follows: In sopping off the gauze with sterile water; in thoroughly irrigating the whole operation area with warm sterile water; in spraying the cicatrizing area and the stitch-wounds with a one-third strength solution of peroxide of hydrogen in water; in douching the conjunctival sac with a warm saturated solution of boracic acid; and in dusting the cicatrization-area with powdered acetanilid.

In four days nearly all of the superficial stitches in the broadest portion of the flap were removed. The other sutures were gradually gotten rid of, until on the 29th of the month the last were cut out, these being those that joined the lower border of the conjunctiva to the adjacent skin.

On the fifth day, at the suggestion of my resident surgeon, Dr. William H. King, the granulation area was dressed, as is sometimes done, with chronic ulcerous conditions in the lower extremities. The exposed surface was dusted with acetanilide. The sound skin around the free space was covered with several layers of gauze with a central perforation equal in size to the granulation area itself, thus affording a bandage which was protective without producing any pressure upon the delicate granulation tissue.

On the fifth day a slight bagging of the lower outer base of the flap induced me to cut a quadrangular trap-door between two or three of the stitches. In this opening I had Dr. King spray the one-third strength solution of the peroxide of hydrogen daily in such a way as to force the material well beneath the flaps without producing any manifest damage to the parts. A few drops of pus upon the first two or three trials showed the wisdom of the procedure.

On the 28th of the month, but eighteen days after the operation, the last stitch was taken out, and the field of operation was permanently exposed to the air.

Two days before, a photograph, showing the first result of the operation, was taken by my friend, Dr. Frank Savary Pearce.

When compared with the conditions four days before the operation, imperfectly seen in the photograph, the difference between the two is plainly manifest.

In April, 1896, more than half a year after the operation, the external canthus was not dragged so much up and out. The eyeball was freely mobile, the patient was well able to cover the eye. The

Appearance of growth before operation, and slanting situation of palpebral fissure immediately after operation.

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frontal cicatrix could barely be seen, and there was not the slightest vestige of the growth remaining.[1]

Temperature, pulse, and respiration remained normal throughout the after-treatment. The almost constant diarrhea with its necessary uncleanliness was one of the most disturbing things that was successfully combated.

Remarks.—This case is reported fully, as the method of operation is most certainly a novel and a useful one. The patient, who was almost absolutely bald in the fronto-temporal region, seemed to present in this peculiarity an opportunity that was appropriate for the form of operative procedure that was adopted.

The restoration of fully one-half of the lid area by an ordinary split skin flap; the accurate coaptation of the mucus and skin surfaces so as to form a new lid border; the making of an artificial external canthus; the almost total disappearance of any of the disfigurements that were first noticeable; the thorough excision of the growth; the full movement of the globe in its various directions; all are but a few of the interesting factors in the permanent result of the case.

The free and generous excision of the malignant mass; the single split flap, totally different from that of Hasner for the restoration of an external canthus; the broad base of the large flap with its full and free vascularity; the method of formation of a ciliary border and a properly-shaped and deeply-set conjunctival cul-de-sac, which is almost, if not quite, as extensive as its fellow; the nearly infinitesimal loss of mucus membrane; the method of preparing and setting the flap; and the plan of superficial suturing, are all of interest, and seem to be of value in the technique of the operation.

The bringing down of a second upper flap, so as to take away the cicatrizing tissues from the eyelids; the production of an upward external dragging of the palpebral fissure, which, if it had not sufficiently fallen into proper position, I would have remedied by the placing of a second cicatricial area down and out from the external canthus just below the outer lower angle of the malar bone; and the redundance of tissue introduced into the lids, which later was greatly lessened, may all seem to have been conditions brought into existence that should be avoided in such cases. The facts, however, that the later results fail to evidence any such early discrepancies, seem to show that under ordinary circumstances they make but little or no difference in the question.

The form of protective dressing adopted for the granulation

[1] A later photograph taken just before the patient's death, a few months ago, unfortunately was a failure.

area; the simple method of cleanliness, and the endeavors to obtain as near asepsis as possible in a broken-down, unhealthy, and unclean subject; the avoidance of any dangerous and even ruinous pus-bearing channels by the little operative device and the faithful use of peroxide of hydrogen; the care and order in which first the superficial and later the deep stitches were removed; and the ingenious wall of gauze in which the granulation-area was enclosed, are but a few of the procedures that seemed to be of interest in the after-treatment of the case.

The one curious feature in the case was the manner in which at first the orbicularis palpebrarum acted. The upper outer fibres which were situated upon the lower part of the cicatrix at times dragged the outer half of the lower eyelid up and out during the earlier stages of the healing process and gave the patient a most quizzical expression.

THE INDICATIONS, DANGERS, AND TECHNIQUE OF UTERINE CURETTAGE.[1]

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Philadelphia,

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Accompanying the invitation to present a topic for your discussion, there was a request that a practical subject pertaining to minor gynecology should be selected, since it would be of interest to the majority of your members more than any of the major operations. No work in minor gynecology is more important or more potent for good, when rightly performed under proper circumstances, or more powerful for evil when injudiciously employed, than curettage of the uterus. Therefore it seemed that a portion of your evening could be given to that subject with mutual profit.

Shortly after Récamier introduced the uterine curette to the profession, in 1850, the report of three deaths following perforation of the uterus by this instrument necessarily made it very unpopular, and in consequence of these unfortunate accidents uterine curettage failed to gain a foothold as a therapeutic measure throughout a period of fifteen years. During the next decade, the profession, following the expe-

[1] Read by invitation before the Altoona Academy of Medicine and Surgery, September 22, 1896.

riences of Sims, Simon, Hegar, Kaltenbach, and Thomas, learned the value of the curette in the treatment of uterine hemorrhages caused by retained products of conception, by fungus growths of the endometrium, or by malignant disease of the womb, and during the same period the curette began to be used for the diagnosis of carcinoma and sarcoma by examining the scrapings from the uterus. The past fifteen years, however, have witnessed an evolution of the curette and of its field of usefulness. Since antisepsis has diminished most of its former dangers it has come into very general use, and numerous papers dealing specially with this subject have appeared throughout the medical world. The size and shape and effectiveness of the curette have been variously modified; the indications, contraindications, dangers, technique, and results of uterine curettage have carefully been studied, more especially during the past five years, but the end is not yet, for there are differences of opinion as to the uses and abuses of entering the uterine cavity with a dull or a sharp curette.

In order to exchange experiences with you and to elicit your discussion of this important subject, a few practical propositions for your criticism are here presented relating to the treatment of certain diseased conditions, as follows:

A.—Curettage of the Puerperal Uterus.

(*a*) Incomplete Abortion.
(*b*) Puerperal Sepsis after Labor at Term.
(*c*) Subinvolution.

B.—Curettage of the Uterus Uninfluenced by or Remote from the Puerperal Period.

The diseased conditions for which the curette may be employed in this second group of cases conveniently can be classified for discussion, as follows:

(1) *Uterine Hemorrhages.*

(*a*) Polypoid or Fungus Endometritis.
(*b*) Uterine Fibromyomata.
(*c*) Malignant Diseases: Diagnostic and Therapeutic Uses.

(2) *Uterine Discharges,—Purulent or Muco-Purulent.*

(*a*) Acute, Septic, or Gonorrheal Endometritis.
(*b*) Chronic, Septic, or Gonorrheal Endometritis with or without Tubal and Ovarian Inflammation.

(3) *Dysmenorrhea and Sterility.*

C.—Technique of Uterine Curettage.

Curettage of the Puerperal Uterus.

(*a*) *Incomplete Abortion.*—It has been my experience that early abortions—*i.e.*, within six or eight weeks after conception—usually are complete, and beyond strict subjective and objective asepsis and antisepsis and rest in bed, little other treatment is required. When, however, bleeding continues, or especially if there is the slightest evidence of putrid odor or febrile reaction exploration of the uterus, usually under ether, is urgent.

Whether the finger, the placental forceps, or the curette is best for this purpose there yet remains difference of opinion. Surrounding the operation with the same details of cleanliness as employed for a vaginal hysterectomy, my own practice is, to dilate the cervix, examine the uterine cavity, and remove with the finger and curette-forceps all fragments of the ovum that can thus be removed, and, finally, to use the sharp curette, paying especial attention to thickened areas of decidua located by the finger during the digital examination. Then the uterus and vagina are thoroughly douched and lightly packed with strips of iodoform wicking or gauze, and the vulva is covered with an antiseptic occlusive pad. Having observed continued bleeding from very small, even insignificant, pieces of decidua, I am not content with the exclusive use of the finger in incomplete abortion, as has been recommended. Possessing a knowledge of the dangers and the technique of handling a sharp instrument in the soft and yielding uterine cavity, the early aborted uterus is entered with confidence, and in my experience always with a happy result.

When an incomplete abortion has been neglected, and the early stage of puerperal sepsis is present, it is necessary to thoroughly cleanse the utero-vaginal canal, to curette the uterus, and to secure drainage by means of iodoform gauze packing. Following these measures more serious surgical treatment, if called for, can be employed without the added complication of an infected uterine cavity.

(*b*) *Curettage of the Uterus after Labor at Term.*—Within the past few years there has appeared a reaction against the curette used for puerperal sepsis, and this reaction has been beneficial, since we have learned that every case of childbed sepsis cannot be cured or even be benefited by routine scraping of the uterus. The dangers of perforating the womb, of carrying infection into the uterus through ignorant and faulty technique, of opening new avenues for absorp-

tion of toxic agents already present in the uterine or vaginal canal, of destroying the lymph-barriers erected by nature to cut off lymphatic or circulatory absorption,—all these dangers have been freely discussed, but they should not deter us from utilizing a most valuable means of treatment at the *right time* and in the *right manner.* My experience with this class of cases has taught me that the curette accomplishes the best results in puerperal sepsis only when it is used early and thoroughly.

With the first symptoms of infection—an ill-smelling discharge or an elevated temperature or a rapid pulse not otherwise accounted for—the uterus is digitally examined, under ether if necessary, and always with most rigid antisepsis. Infected wounds of the vagina, of course, must not be overlooked. The finger will tell you where to use the curette, and it should be an inflexible rule of practice only to scrape where the finger has found decidual or placental excrescences or areas of soft and perhaps necrotic tissue. Curettage of the uterus properly performed at this early stage of infection preceded and followed by irrigation with very large quantities (a gallon) of sterilized or, if you choose, antiseptic fluid, will accomplish good results. It is true that clean obstetrics will almost banish the curette from the obstetric bag and from the lying-in hospital. The number of curettements at the Preston Retreat in 700 consecutive deliveries has been only seven, but my notes of cases contain a large number collected from consultation work outside the Retreat.

For cases of puerperal sepsis further advanced than those just mentioned, are curettage and drainage by means of gauze to be employed, or are they not only useless but even dangerous? The degree of infection and the condition of the patient help to answer this question. Puerperal uterine phlebitis is made worse by curettage, and no good is accomplished when the tubes, the ovaries, the connective tissue, or the peritoneal cavity contain pus. Short of such cases thorough cleaning and drainage of the uterus by the curette and gauze will help to arrest further absorption from the uterus, and will either place the patient in a position to fight through the dose of poison she has absorbed or will fortify her for graver surgical measures.

(*c*) *Subinvolution.*—In the transition from the obstetric to the gynecologic uses of the curette, subinvolution of the uterus naturally presents itself, and is the disease in which the results of curettage are always brilliant, if, when required, mechanical or surgical measures are utilized to correct displacement and to give support to the uterus. By means of curettage subacute endometritis and metritis are arrested, and the pathological sequence of inflammatory changes in the tubes, the ovaries, the peritoneum, and the cellular tissue is

abruptly terminated. Subinvolution neglected is an opportunity lost. The stage of uterine congestion and infiltration soon passes to connective-tissue formation with induration, and the troublesome nervous, digestive, and circulatory disturbances of chronic uterine disease soon appear. As will be pointed out later, it is true that even advanced stages of inflammatory changes in the endometrium and in the deeper structures of the womb can be relieved and often can be cured by curettage, but at no time are the therapeutic results so brilliant as in the stage of infiltration.

It will be observed that thus far in our discussion the greatest value of uterine curettage is obtained when it is employed promptly to arrest the progress of pathological changes. Its usefulness decreases in direct proportion to delay.

Curettage of the Uterus Uninfluenced by or Remote from the Puerperal Period.

(*a*) *Uterine Hemorrhages.*—The earliest use of the uterine curette was for hemorrhages due to polypoid or fungus endometritis. Very frequently, and especially in women who have not borne children, and whose uteri therefore have not undergone the physiological processes of partial regeneration incident to involution, the mucous membrane is congested and is hypertrophied, either at localized areas, especially likely to be located at the uterine cornua, or the entire endometrium may be hypertrophied to three or four times its natural thickness. Irregular and profuse menstruation is the constant symptom of this condition. No method of treating these cases offers such brilliant results as a thorough curettage of the uterus, special attention being paid to the regions of the tubo-uterine orifices. Among women who have aborted or who have borne a child at term and have been wholly free from infection, decidual or placental remnants may occasion repeated bleeding, which the curette will promptly cure.

(*b*) *Uterine Fibromyomata.*—The curette followed by applications of tincture of iodine or carbolic acid will control for a time the hemorrhage from interstitial or submucous fibroid tumors when the bleeding is caused by an hypertrophied endometrium. The danger of wounding the capsule of a submucous tumor that may be followed by infection, suppuration, and gangrene, should always make one particularly careful to perform curettage in these cases with most careful antiseptic precautions. Furthermore, it should not be forgotten that an atrophic endometritis sometimes accompanies uterine fibroids, under which circumstances the curette can have no possible effect in controlling hemorrhage. Semb[1] has shown that usually the bleeding

[1] Archiv für Gynäkologie, XLIII, p. 200, 1893.

which is so constant a symptom of interstitial and submucous myomata, is due to congestion and hypertrophy of the uterine muscularis rather than of the endometrium, and that the inefficiency of removing the endometrium for controlling hemorrhages due to fibroids is therefore to be expected.

The respite from hemorrhage following curettage is usually of short duration, and is now rarely employed except to gain time to improve the condition of an exsanguinated patient that she more safely may undergo a radical operation.

(*c*) *Malignant Disease of the Uterus.*—The interior of the womb should always be explored, and the curette should be used to obtain scrapings for microscopical examination by an expert pathologist whenever a woman past 30 years of age complains of repeated hemorrhage from a uterus which is not much enlarged. It is worth remembering that in about 50 per cent. of the women who have menorrhagia and metrorrhagia after the menopause, the bleeding is due to carcinoma.[1] The real value of the curette, so far as concerns carcinoma or sarcoma of the uterus, is that of early diagnosis. Cases too far advanced for radical treatment are, of course, benefited for a time by thorough scraping and cauterization, but those of you doing general practice are the men who see these cases early, and if you can be prevailed upon to use the curette promptly and efficiently in order to make an early diagnosis, you will save many lives. It is unfortunate, yet it is true, that the gynecologist very frequently receives these cases from the general practitioner too late to remove all cancerous tissue by radical operation.

(2) Uterine Discharges,—Purulent or Muco-Purulent.

(*a*) *Acute, Septic, or Gonorrheal Endometritis.*—Acute endometritis in the non-puerperal uterus, excluding the cases of gonorrheal origin, is now a very rare occurrence since we have learned the dangers of careless intrauterine examination and treatment conducted in one's office. The uterine sound, formerly the *sine qua non* of routine office work, fortunately now enjoys a restful and, I trust, a regretful old age. Tents, stem pessaries, and careless intrauterine applications also have had their day. Although gonorrhea practically remains the most frequent cause of acute endometritis in non-puerperal uteri, menstrual suppression from exposure to cold or mental excitement may very rarely occasion an acute inflammation of the endometrium, or unclean instruments may be at fault.

Disregarding the treatment of the mild forms of acute endo-

[1] Monatsch. f. Geburts. und Gynäkol., Band 1, Heft 3, 1895.

metritis, for which radical intrauterine treatment is unnecessary, it is certain that the prompt use of curettage followed by repeated irrigation and gauze drains will favorably modify the course of the virulently septic cases. It is worth remembering that copious douching of the vagina and of the uterus twice daily is quite as important as the use of the curette.

When the endometritis is due to gonorrhea or to a mixed infection, even the prompt treatment above recommended will fail sometimes to wholly prevent extension of the infection to the tubes and ovaries, but we may expect these organs to escape the gravest pathological changes if intrauterine treatment is not too long delayed.

(*b*) *Chronic Endometritis.*—In recent years the disease of the uterus most frequently treated by curettage is chronic endometritis accompanied by a purulent or a muco-purulent discharge, and associated with increased or diminished menstrual flow and with more or less pelvic pain. This in briefest outline is the symptom complex of a very large proportion of the women who consult you in your offices for what the patient terms "womb-disease." Let me here ask you to remember that in the majority of cases endometritis is only a part of their disease, and before resorting to the curette or other intrauterine treatment careful diagnosis is required. The use of the curette in the presence of grave tubal, ovarian, or peritoneal inflammation has often brought disaster. Notwithstanding this fact, there are cases of endometritis associated with minor degrees of periuterine inflammation that can be successfully curetted with great safety and with prompt and lasting results. Indeed, in this very class of patients, as well as in the uncomplicated cases, the proper use of the curette is more efficient and less dangerous than the intrauterine applications which so commonly are employed by many general practitioners. I have little confidence in the efficacy of intrauterine treatment by means of routine applications made in the doctor's office. Ample dilatation of the cervix to insure drainage for the slough produced by the caustic, a surgically clean vagina and cervix, and sterilized instruments are conditions without which intrauterine treatment with astringents and caustics is prone to be harmful rather than beneficial, and they are conditions obtained with difficulty or impossible in the office of a busy practitioner.

The observations of Brandt,[1] who found bacteria in twenty-two of twenty-five cases of chronic endometritis, indicate how frequently endometritis has a septic origin, a fact believed to be especially true in women who either have aborted or have borne a child. This fact

[1] Centralblatt für Gynäkologie, 1891.

also indicates the importance of treating endometritis early in its progress before the involvement of the tubal mucous membrane, and, further, it explains how beginning infection of the tubes is often terminated by a curettage of the endometrium, the septic focus being thereby removed.

When the patient presents the symptoms described above, an examination will likely reveal one or more of the following local conditions. The pelvic floor may be relaxed; the cervix may be lacerated; the uterus is enlarged, very likely displaced, perhaps adherent; and one or both appendages may be more or less diseased and displaced. The intelligent treatment of these patients, who comprise the greater number of your gynecological cases, will require your best judgment and the selection of measures varying in importance from a celeotomy to the introduction of a pessary or a glycerin tampon or to simple directions for using hot douches.

Having decided that the periuterine inflammation has not produced widespread destructive changes with firm adhesions and puriform collections,—conditions which require abdominal or vaginal incision and removal of the hopelessly diseased organs,—the case comes within the domain of minor gynecology, and the value of curettage is in its association with other measures. If the cervix is badly lacerated, curettage of the endometrium should precede repair of the former. The same is true of the perineal operation, for a long-standing displaced uterus has a diseased endometrium which contributes a large share to the patient's ill health.

Four or six weeks after the appropriate operative measures, if the uterus is displaced a pessary may be tried, with the expectation that in a small proportion of the cases the uterus will retain its normal position. After plastic operations and after curettage for subinvolution the pessary is sometimes curative, under other circumstances it has usually disappointed me.

(*c*) *Dysmenorrhea and Sterility.*—Dysmenorrhea is referred to because one type—namely, the exfoliative or membranous variety—finds in the curette the only method of treatment that has any value, and because in the past dilatation of the cervix was considered the most efficient treatment of dysmenorrhea when the latter is associated with stenosis and sterility. In a large proportion of the latter cases much of the benefit of the treatment has been due to the curettage which followed the divulsion of the cervix, because endometritis is a large factor in the production of the pain and the sterility. When called to treat these patients, we must never forget that painful menstruation is a very constant symptom of pelvic inflammatory disease, and before resorting to the dilator and the curette to relieve dysmenorrhea, a

most critical examination of all the pelvic organs should be made. The dilator and the curette will usually do great harm unless used by a careful diagnostician.

The curette can be of service in the treatment of sterility only when that symptom is caused by an endometritis, whether the latter is or is not associated with a mechanical obstruction such as stenosis or flexion. It is well known that the spermatic particle cannot survive contact with an acid endometrial discharge. Moreover the discharge accumulated in the uterine cavity sometimes renders conception impossible by offering the fertilizing element a mechanical obstruction.

The removal of these two causes and the subsequent improvement of beginning tubal and ovarian disease explain the cases of conception that frequently follow uterine curettage. This result is repeatedly observed and especially in the cases of so-called one-child sterility, in which a woman remains sterile after her first conception, which was followed by an abortion or a labor at term leaving her uterus chronically inflamed. Besides the clinical demonstration of the efficacy of the curette to overcome sterility in a certain proportion of cases of endometritis, the physiological explanation appears from the work of Bossi,[1] who investigated the condition of the mucosa and its regeneration after curettage, by examining uteri removed by hysterectomy from fifteen to twenty-seven days after the endometrium had been scraped. In one case after the lapse of fifteen days the endometrium was regenerated, except in a very few places where the epithelium was imperfect; after twenty-five or twenty-seven days the microscope found the mucosa completely restored. In seven other cases conception occurred after twenty-five to twenty-seven days, in which cases pregnancy proceeded to term and delivery was uncomplicated.

While the curette is useful in many cases of sterility, it were folly to hope to render a woman fertile whose tubes and ovaries are seriously damaged. The results always are to be measured by the duration and the character of the endometrial and the tubal inflammation.

Technique of Uterine Curettage.—When good judgment has been exercised in the selection of an appropriate case for uterine curettage, the next important step is that the physician should be absolutely certain of his knowledge of the dangers of that operation and of the proper technique to be employed in order to escape those dangers. Many general practitioners will undertake to curette the uterus who

[1] Ann. di ostet. e ginec., XVII, p. 73, 1895.

would shrink from a vaginal hysterectomy or even a perineorrhaphy and trachelorrhaphy.

It is very unfortunate that the entering so important an organ as the uterus with various instruments is generally considered an operation of minor importance. It is not exaggeration to affirm that the proper selection and skilful execution of curettage of the uterus, especially when resorted to at a period remote from the puerperium, requires a greater degree of sound surgical judgment and a more intimate knowledge of surgical technique and a larger share of surgical skill than are necessary for the repair of a lacerated cervix or a torn perineum.

Briefly stated, the dangers to be avoided are the introduction of infection which may be followed by serious inflammation of the tubes, the ovaries and the peritoneum, and even by death from septicemia; laceration of the cervix or of the vaginal vaults, due to improperly executed dilatation; rupture of purulent collections in the pelvis, when these, through faulty diagnosis, have been overlooked; perforation of the uterine wall by the curette, the forceps, or by other instruments; the induction of abortion through a mistake in diagnosis; the occurrence of serious hemorrhage and very rarely the possibility of ultimate obliteration of the uterine cavity.

A proper selection of cases for uterine curettage and a knowledge of its technique will reduce these dangers to a minimum.

Preparation for the Operation.—The time selected for operation in non-puerperal cases should be a few days after the cessation of a menstrual period in order that sufficient time may be secured during which the endometrium will be regenerated. A preliminary urinalysis should be made. Twenty-four hours before the operation the patient should be put to bed; a saline purge having been administered the day before. The vulva and the vagina must be systematically cleansed the evening before, and the morning of the operation in the following manner: Thorough scrubbing with green soap and water by means of pledgets of cotton fastened to a sponge-holder should be followed by free irrigation with a 1:1000 bichloride solution, after which the vagina is loosely packed with bichloride or iodoform gauze. Before the patient is anesthetized the rectum should be emptied by one or more enemata, and the urine should be drawn. The instruments I have found most useful for curetting the puerperal and the non-puerperal uterus are those I show you. They should always be sterilized in boiling water for fifteen minutes before the patient is anesthetized.

The operator and those assisting him should cleanse their hands with the same care as for a hysterectomy, using an abundance of hot

water, with soap and nail-brush, followed by scrubbing with alcohol for five minutes and a final immersion in a 1 : 1000 bichloride solution.

The patient, anesthetized, is placed in the lithotomy position on a table, when it is always desirable to make a bimanual examination of the pelvic organs to be sure that serious lesions have not been overlooked. Final cleansing as above described is then made, the anterior lip of the cervix is grasped with a double tenaculum and is gently drawn into view when not fixed by inflammatory products, and the cervical canal is thoroughly cleansed. Sometimes it is desirable to retract the perineum. A self-retaining speculum, such as Edebohl's, is very useful for that purpose, especially when one has few or no assistants.

Dilatation of the cervix usually is not required for puerperal cases, but is always employed for the non-puerperal uterus in order to obtain free drainage, which is an essential feature of the operation. For that purpose the anterior lip of the cervix is grasped and steadied with the double tenaculum, and the smaller dilator is introduced. I prefer the branched dilators to the graduated bougies, and to avoid lacerating the cervix or even tearing through the posterior wall of the cervix into the peritoneal cavity, care should be taken to learn the direction of the uterine canal, to open the cervix gradually with the smaller instrument, and to be sure the larger instrument passes the internal os before forcible dilatation is begun. After dilating laterally, say for a half-inch, the tension of the instrument is relieved and dilatation to the same extent in antero-posterior and oblique directions is practised, the position of the blades of the instrument being turned at intervals so as to effect dilatation equally in all directions. In multiparæ sufficient dilatation usually can be made with safety to introduce the finger into the uterine cavity. In nulliparæ an inch registered on the scale of the dilator is sufficient. Usually fifteen minutes should be consumed to complete the dilatation, although the time will depend upon the softness or rigidity of the tissues. A finger placed behind the cervix will indicate the degree of tension to which the tissues are being subjected. The uterine cavity should now be thoroughly flushed with a 1 : 2000 bichloride solution passed through a two-way male catheter or a uterine douche-nozzle having a return flow. This plan is preferable to the douche-curette, an instrument frequently employed but not readily kept clean. The sharp curette is next passed to the fundus, and with one hand supporting the uterus through the abdominal wall, the entire cavity is systematically scraped until the cutting edge of the curette imparts a scratching or gritty sensation, which announces the fact that the endometrium has been passed and that the muscle wall of the uterus has been reached. Our

work must be thorough, and the entire endometrium must be removed if possible. Areas of diseased and infected endometrium untouched by the curette only serve to re-create and perpetuate the disease our treatment aims wholly to destroy. The regeneration of the mucosa begins in the depths of the utricular glands embedded in the uterine muscle, and our effort is to completely destroy the diseased membrane in order that a new one may be formed. Particular attention, therefore, must be paid to the fundus and to the uterine cornua. For these regions Simon's spoon and Sims's angular curette are especially useful. For the lateral walls of the uterus Sims's sharp curette is preferred. While one instrument may be sufficient, I have been better satisfied to use three, because the angle of the cutting edge in each is best adapted to a different plane of the surfaces to be scraped. The uterus should again be douched and the *débris* be removed with the curette forceps, an instrument to be employed with caution, since many of the reported cases of uterine perforation have occurred with that instrument.

When the womb has been emptied of all *débris* and has been douched, the cavity is swabbed with iodized phenol or a 50-per-cent. solution of carbolic acid in glycerin. A pledget of cotton placed around the cervix and the stream from the douche will protect the vaginal and vulvar mucous membrane during the cauterization of the endometrium. Finally, a strip of iodoform or acetanilide gauze, one inch wide and one yard long, squeezed out of the bichloride solution, is packed into the uterus, either through a cervical speculum or preferably with a slender uterine dressing forceps. If the uterus is large and subinvoluted and uterine contractions are desired to promote involution, or if the bleeding is very free, the gauze packing is firmly placed. If only drainage is desired, the packing is more loosely applied. The end of the gauze protrudes into the vagina, which is filled with a loose tampon of gauze. An occlusive dressing is placed over the vulva.

After-Treatment.—If necessary, the urine is drawn in eight or twelve hours. The vaginal packing is removed at the end of forty-eight hours, the vagina is douched, and the gauze renewed. The gauze in the uterus is removed on the third or fourth day, daily vaginal douches of bichloride solution, 1 : 4000, being employed until and immediately after the uterine packing is removed. It is desirable to have the patient rest in bed for a week and at the next menstrual period, during which the flow is likely to be scanty. In septic cases after abortion or labor the uterine and vaginal packing should be removed at the end of twenty-four hours, and the vagina and uterus should be freely irrigated, after which the gauze may be renewed.

The douche-nozzle used for puerperal cases should have a large calibre, as in the nozzle I show you, in order to freely flush the cavity. The mechanical advantage of a copious stream to remove *débris* from the uterus is self-evident. The curette also should be proportionately large.

My remarks on this important subject contain nothing new. It has been my purpose to make them practical, and to assure you that through your timely interference with the uterine curette, along the lines I have tried to indicate, a few of your patients will be spared their lives, some of them will escape the removal of their pelvic organs, and many of them will avoid a life of discomfort resulting from the milder grades of pelvic inflammatory disease.

I am aware of the fact that many gynecologists would criticise the wisdom of an attempt to stimulate the employment of the uterine curette by men who from choice or environment are general practitioners. There is no reason why you should not use an instrument potent for good as well as for evil, provided you will use it with intelligence and with a knowledge of its dangers and its limitations.

PENETRATING WOUNDS OF THE EYE: THEIR PROGNOSIS, DIAGNOSIS, AND TREATMENT, WITH ESPECIAL REFERENCE TO RAILWAY EMPLOYÉS.

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Mr. President and Fellows of the Academy,—Possibly next in importance to the question of life and death which we as surgeons will be called in to decide is that of total blindness. This appeals especially to us as railroad surgeons in the treatment of penetrating wounds of the eyeball. As the injuries of this character are so frequent, and the majority of patients being principally of the working class, the loss of this function not only disqualifies them for any useful occupation, but makes them burdens to society and inmates of asylums.

We are all familiar with the disastrous termination in sympathetic disease that closes the history of many cases of injuries of the eye. Although this now appears to us rather as a bad dream,

with the more improved methods of treatment and antiseptics, which we have at our command, yet no surgeon treats a severe penetrating wound of the eye that this ghost does not stand before him. Therefore we should not hesitate to use every means, including the radical operation of enucleation, to prevent this fatal complication.

Cohn's statistics give a good idea of the frequency of the injuries to which the eyes of many workmen are exposed. Among 1283 workers in metals employed in six factories, each man received an average of from two to three eye-injuries a year. Of course, the majority of these injuries were of a slight character; most, indeed, consisted merely in the penetration of small metallic particles into the surface of the cornea, which were for the most part removed at the factory itself. About half of the workmen were required to seek medical aid, thirty-six suffered a partial impairment of sight, and sixteen (that is 1.2 per cent. of the whole number) each lost one of the eyes.

Diagnosis.—The most important subdivision of the subject of penetrating wounds is the diagnosis. By the careful study of individual cases only can the treatment be successfully and intelligently carried out.

To facilitate the study, I propose to divide the eye into three regions,—anterior, middle, and posterior,—thus making a topographical division rather than an anatomical one, that while possibly not so accurate will better serve our purpose.

In the first or anterior region is included the cornea, lens, iris, anterior and posterior chambers. Of the three regions wounds here are the least dangerous. By the word dangerous I mean wounds that are followed by complete loss of one eye or secondary involvement of the other. Of course, there will be impairment of vision, corresponding to the extent of injury, for example, wounds of the lens are almost invariably followed by a cataract. But panophthalmitis and sympathetic ophthalmia are comparatively rare. You will note that I have included the iris in this region, and although injuries to it are much more dangerous than those to any other structure in this portion of the eye, yet, if the wound does not include the periphery of the iris, and the iris be not extensively prolapsed, you will find that it will readily heal. One of the causes of this region being less dangerous is that it is less liable to become infected, as the outflowing aqueous humor washes away again the germs which have been introduced into the wound, and the prolapse of the vitreous which always occurs in wounds farther back is a most favorable medium for the growth of micro-organisms.

Signs.—The signs of penetrating wounds to this region consist in diminution of tension until the wound is firmly closed, loss of the aqueous and forward dislocation of the iris. If the wound is extensive there will certainly be prolapse of the iris. If the iris is simply bruised we have blood effused into the anterior chamber. Wounds of the lens can be seen either by the ophthalmoscope or by oblique illumination. They are associated with pain and inflammation.

The second or middle region,—the ciliary region. This is described by Nettleship as the "danger" region of the eye. This region comprises the ciliary body, anterior portion of the retina, choroid and vitreous, and approximately consists of the sclero-corneal junction, and that portion of the eye about a quarter of an inch posterior to it. Wounds of this region are the most dangerous of any portion of the eye, and the prognosis is always grave. Symptoms of wounds of this region consist of loss of tension until the wound is closed; if associated with corneal wound the anterior chamber is abolished, the iris pushed forward; if the wound involves the sclera, and we have loss of vitreous, the iris may be retracted with deepening of the anterior chamber. The ciliary body and choroid are most frequently prolapsed into the wound, as shown by a darkly-pigmented mass projecting from it, there is hemorrhage into the vitreous, and bringing associated pain, etc.

The third or posterior region. This consists of the remaining portion of the eye posterior to the area designated as the ciliary or middle region. It consists of the sclera, choroid, retina, and vitreous. Wounds of this region are very much more rare, and are less disastrous than those of the ciliary region, but far more so than wounds of the anterior region, as prolapse of the coats of the eye is more likely to occur, and infection more difficult to prevent. Also, secondary changes take place in the wounded eye due to the contraction of the cicatrices of the wound. The symptoms here consist in loss of tension, retraction of the iris from loss of vitreous, hemorrhage in the vitreous, inflammation pains, etc.

All penetrating wounds must be studied carefully both by objective and subjective means and aided also by instruments at our hands, such as the ophthalmoscope and condensing lens. The history of the case must be gone into most carefully. How the injury occurred, the direction from which the foreign body came that produced the wound, its size, its composition, whether septic, and, finally, whether the wound is complicated or uncomplicated by the presence of a foreign body.

Small incised or lacerated wounds of the eye may be made by

either large or small bodies. If we have to deal with a penetrating wound, and can learn that it was produced by a small flying piece of steel, we are moderately confident, even without the aid of the ophthalmoscope, that the foreign body is within the eye. On the contrary, if it is made by a knife, an awl, or tool of some character, we are sure that the injury is not thus complicated.

Much depends upon the composition of the foreign body producing the wound. Leber, by his experiments, has shown that some metals can produce severe purulent inflammation even if introduced into the eye aseptically, and that the inflammation following such injuries may be due not to a micro-organism that may gain access to the wound, but to the chemical action of the metal introduced. Copper is pre-eminently dangerous to the safety of the globe. Iron and steel, although offering probably the best prognosis for their removal, produce irritation, since they are subject to oxidation. Lead and other chemically indifferent bodies, such as glass, stone, coal, as they are not decomposed, produce irritation mechanically, and by the fact that they carry the micro-organisms with them. Splinters of wood are among the most innocuous of foreign bodies.

As to whether the wound is aseptic or not. Inflammation is excited by the presence of micro-organisms which make their way into the interior of the eye from the conjunctival sac, either along with foreign body or subsequently ; if a small incised wound is made by a clean instrument, such as a pin, a knife, etc., purulent inflammation is rare.

In injuries made by shot the combustion of firing the powder makes the shot generally aseptic. Orio, of Padua, has shown this by his experiments reported at the meeting of the Italian Ophthalmic Society last year. He fired with pistol-shot previously infected with pyogenic micro-organisms into eyes of rabbits and culture-tubes. In no case did the micro-organisms develop. He, however, placed some shot in eyes and culture-tubes with almost immediate development of micro-organisms. This has been my experience. I have seen several cases in which small shot penetrated the ball without producing severe inflammation.

Landolt has found from his observations of the patients that injuries produced by explosions of dynamite are aseptic for this same reason. Small pieces of iron and steel, if red hot, enter the eye aseptically. As I said before, inflammation is not produced by chemical action. Large foreign bodies producing lacerated wounds and disorganization of the eyeball are liable to be followed by subsequent inflammation.

Wounds Complicated and Uncomplicated by a Foreign Body.—If

the case is seen shortly after the injury, and there is no wound of the lens and the vitreous not too full of blood, we are often able to locate the foreign body by the ophthalmoscope. If this fails, through the reasons above stated, we will have to depend upon the history of the injury, the character of the foreign body which produced the wound, —in other words, diagnosticate it by exclusion. If, however, the patient cannot give us any clear account of the accident, owing either to ignorance or, as it often happens, to unconsciousness from the violence of the explosion, as to whether or not the foreign body has entered the eye and remained there, it may be put down as a good rule that if the inflammation is disproportionate to the trauma alone, we may be almost confident of the existence of a foreign body within the eye.

Finally, the discovery of the X-rays, which have been so valuable in aiding the diagnosis in surgery, will also be of great service in determining in some obscure cases not only the presence of the foreign body, but its location, which will aid greatly in its removal. There have been several successful cases reported. This is, however, a procedure that will hardly be required in the majority of cases, but when all other methods of diagnosis fail it should certainly be used.

Prognosis.—Possibly the most important point of the subject of penetrating wounds is after we have carefully diagnosticated the case as to the character of the wound, the foreign body producing it, etc., to decide the fate of the eye and possibly that of its fellow.

The dangers which stand paramount before us in case the tunics of the eye are opened are, first, that infection may take place and the eye be lost by panophthalmitis; second, that sympathetic ophthalmia may develop in its fellow-eyeball, with loss of both eyes; third, if the tissues are prolapsed and caught in the scar, or a foreign body remains in the eye, although the wound may be healed, there is always danger, even in years to come, of subsequent changes taking place in the wounded eye, such as detachment of the retina due to cicatricial contraction, degeneration of the wounded tissues, or recurrent attacks of inflammation that may be followed by blindness in the other eye by a slow form of iridocyclitis.

The prognosis in all these cases of wounds depends upon the location of the injury, whether infection has set in, and whether or not the foreign body producing the injury is still in the eye. As regards the location, nothing further should be said, as I have already stated, in speaking of the other three regions, the ciliary is by far the most dangerous. As we do not know for the most part whether or not the foreign body producing the injury is aseptic, the prognosis should be exceedingly guarded for a few days. If, however,

inflammation sets in, the eye is almost invariably lost. When the foreign body remains in the eye after the injury, the prognosis is almost absolutely unfavorable. There are many cases reported where foreign bodies have been carried within the eye for years without giving the slightest trouble. These generally find lodgement in the iris or are encapsulated, but in comparison with the excessive frequency of the injuries, the number of these cases are exceedingly small; and even in these cases the safety of the eye is by no means to be considered permanently assured.

As Berry says, "No doubt eyes have been sacrified from the fear of sympathetic ophthalmia that might have been retained or restored to useful vision; but it would take many of these mistakes, in which there will always be a doubt as to whether the eye might after all be safely left, to justify the self-reproach which the opposite mistake must cause in any one who is properly alive to his responsibilities."

The practical point is then, What shall we as railroad surgeons do in this condition? I have already stated the dangers that face us as regards the wounds of the eye and also the conditions upon which the prognosis depends. It remains to point out the course to pursue.

Sympathetic irritation, although not always followed by sympathetic inflammation necessarily, yet undoubtedly in the majority of cases may be considered a prodromal stage, and that sympathetic inflammation will develop sooner or later.

The symptoms of irritation are pain and tenderness, especially over the ciliary region; pericorneal injection, photophobia, lachrymation, inability to do near work from accommodation, weakness, and redness of the disk. When an eye presents these symptoms following an injury to the other eye, sympathetic inflammation may develop in a few days or few weeks. The usual time is, however, about four to eight weeks. It has been known two weeks or forty years after an injury.

If any injury to one eye is followed by these symptoms in the other and the vision is absolutely gone in the exciting eye, it should be enucleated. If there is still some hope of vision in the exciting eye, it should be watched and treated most carefully, and at the same time the sympathizing eye treated by rest in a dark room, atropine, and mercurials.

In cases where the injuries are so extensive that the sight is obviously lost, especially when complicated by the presence of a foreign body that cannot be removed without too much damage to the eye, enucleation should be done promptly, and especially in railway cases, as the majority of patients that come under our care cannot be kept under prolonged observation; they also belong to the class

which do not recognize the danger symptoms which come on so insidiously in this disease; also, you remove all dangers of sympathetic ophthalmia, cut short a protracted illness, and allow the man to return to his occupation.

In cases in which sympathetic ophthalmia has developed, and there is reason to believe there is hope of vision in the exciting eye, it should not be excised, since eventually the better vision might be retained in the exciting eye.

In cases where sympathetic irritation develops in an eye arising from the presence of an old stump, before any operation is done the refraction should be carefully tested, as several times I have seen serious symptoms disappear with a good correction of the ametropia.

In speaking of the treatment, I shall observe the same scheme as spoken of before,—that is, dividing the eye into three portions and taking each up separately.

Treatment uncomplicated by Foreign Body.—Penetrating wounds of the cornea, if made by a sharp instrument and not infected or very extensive, are comparatively free from danger, and heal by first intention. In these cases the eye should be thoroughly irrigated with an antiseptic solution, boric acid or bichloride of mercury (1 : 8000); if the wound is lacerated the edges should be replaced and touched with formalin, about 1 : 100, and pyoktanin, 1 per cent.; and a mydriatic or myotic, depending upon the position of the corneal injury, should be used with pressure bandage. If much, inflammation should be combated with ice compresses.

If the wound involve the iris or the iris prolapse, if the case is seen very early, the prolapse should be removed, if possible, by either a mydriatic or myotic. If, however, this procedure is not successful, as in most cases, the prolapsed iris should be excised and the wound treated the same as a corneal injury.

In wounds of the lens the first indication is to combat the inflammation which usually follows the injury. Ice compresses are the most serviceable against impending inflammation and also against the great swelling of the lens. Removal of the lens should be performed only when through its great swelling it is itself the cause of inflammation or increased tension. Otherwise it is better to put off the operation until later lest the inflammatory symptoms be aggravated or brought on anew by it. If the wounds in these structures are complicated by the presence of a foreign body, the first indication is to remove it, if possible, if the removal does not cause too much destruction of tissue.

Penetrating Wounds of the Cornea.—You rarely find the foreign body in the cornea, unless it be a sharp instrument like a pin or needle, which must be removed. Or, as is more common, it remains

in the anterior chamber. If the wound is large enough, it can be removed by a small forceps or electromagnet; otherwise, an opening should be made in the cornea and the foreign body removed through it. If it finds lodgement in the iris, it may be removed by small forceps, or, as is more generally the case, a small iridectomy must be done for its removal.

If lodged in the posterior chamber, iridectomy and a magnet and forceps may remove it. If it finds its way into the lens, this is the most favorable position as regards the safety of the eye. If there is not too much swelling of the lens, the foreign body should be left, and later extracted with the lens by the ordinary cataract operation.

Wounds of the Posterior Portion and the Middle Portion of the Eye.—These injuries are more serious, due to the prolapse more frequent of coats, and in these cases the eye should be made scrupulously clean. If the wound is large, it should be stitched with fine catgut sutures, preferably through the superficial layers of the sclerotic; the wound should then be irrigated with a solution of some antiseptic (1 : 8000); at the first sign of general inflammation the ball should be enucleated.

Pain, etc., should be treated by mydriatics and opiates. If the injury is complicated by a foreign body, it should be removed, if possible, either through a wound or opening made in the sclerotic. If steel or iron, it should be removed by an electromagnet. If, however, other substances, it should be removed by the forceps. These cases generally come to enucleation, however.

A DIPROSOPIC MONSTROSITY,—A RARE CASE OF TERATISM.

By W. A. Newman Dorland, M.D.,

Philadelphia,

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Of the forms of composite monstrosities, those exhibiting diprosopia, or duplication of the face, must be regarded as among the rarest varieties encountered, at least in the human race. Thus, according to Hirst and Piersol, in 500 fetal monsters of every description observed by Förster, there were noted only twenty-nine that were diprosopic, or 5.79 per cent.,—a very small proportion of a fetal condition that is rare at the best. These diprosopi have been described as

showing varying degrees of facial duplication from the simplest form in which there is merely a doubling of the lower portion of the face, characterized by the presence of two mouths communicating with one oral cavity, and the usual number of eyes, *diprosopus diophthalmus*, up to an extreme differentiation of the features with a degree of separation of the heads approaching the condition known as dicephalus. The accompanying photograph, which was taken by a Chinese photographer, of Siam, and presented to the writer through the courtesy of his brother-in-law, Dr. James B. Thompson, of Petchaburee, Siam, represents that variety of the diprosopi known technically as *diprosopus tetrophthalmus*, in which there are present four eyes, although the individual still has but two ears.

The teratism in this instance was a female, born in the village of Ban Laam, a few months ago, of Siamese parentage. It had four eyes, two mouths, and an unusual width of the head. No mention is made of any other congenital defect,—to which this form of monstrosity is especially liable,—although it is probable that such existed internally. The child survived for fifteen days, eventually dying of inanition, which was induced by an inability to retain the nourishment taken, since the milk introduced through one mouth was immediately regurgitated through the other mouth, thus proving the existence of a common esophagus opening into the two oral cavities.

The points of especial interest in this case, in addition to the variety of malformation itself, are the sex of the child and the length of time that it survived. Of five cases examined by Fisher three were females and two males, and of the twenty-nine cases reported by Förster, sixteen were females and six males, in seven cases the sex not being stated. This indicates in thirty-five reported cases a percentage of $57\frac{1}{7}$ of female children, or about two-thirds of the reported cases. Owing to the presence of other grave congenital defects, notably of the gastro-intestinal canal, the majority of the diprosopi are not viable. The child in the present instance lived for fifteen days, and Hirst and Piersol state that cases have been reported in which the child lived fifteen minutes, several weeks, and in one case seven months, with a good prospect of continued existence (Regnault, quoted by Fisher).

A Diprosopic Monstrosity.

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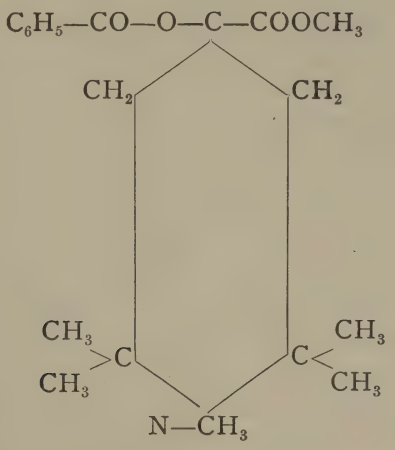
EUCAINE HYDROCHLORATE.

By G. W. Spencer, M.D.,

Philadelphia,

Assistant Demonstrator of Surgery, Jefferson Medical College.

Recently there has been introduced to the medical profession a new local anesthetic, which, for convenience, is called by the name of eucaine hydrochlorate. Its chemical name is very formidable, —namely, methyl-benzoyl-tetramethyl-gamma-oxypiperidine-carbonic acid methyl ester. Its constitution is represented by the formula,—



From a considerable experience with local anesthetics, we can safely say that this agent produces the most complete local anesthesia of any drug tried up to date.

In none of the tabulated operations performed in the surgical department of the Jefferson Hospital with this drug was it necessary to hurry or administer more of the drug on the account of pain, and yet two of the operations required twenty-five minutes for completion. It proved to be harmless in amounts as large as twelve and fifteen grains, as can be seen by Cases 5, 13, and 15.

Unlike most of our local anesthetics, especially cocaine, eucaine does not lose its strength when kept in solution. On August 15, a half-ounce bottle was filled with a 2-per-cent. solution of eucaine, and on September 26 twenty minims of this solution were injected into the gums of a patient, causing complete local anesthesia, which lasted for five minutes. Eucaine does not decompose even when

boiled; as in all the cases after the fifth, cooled boiled solutions were used, and there was no difference in the anesthetic effect. The solution should always be boiled before using to render it sterile.

Experiments with this drug on animals would indicate that it is capable of producing positive symptoms.

A paper was read at the session of the Hufelandsche Gesellschaft, Berlin, April 16, 1896, by Dr. Gætano Vinci,[1] of Messina, who says the general action of eucaine, both in cold- and warm-blooded animals, consists in a marked excitation of the entire central nervous system. Large doses cause fatal paralysis. Even one-third of a grain caused irritability, heightened reflexes, inco-ordination, and finally general paralysis. Small doses administered to mice and rabbits caused increased reflex excitability and increased but weakened respiratory movements. Doses of one-third to one-half grain per kilogramme of body weight caused repeated tonic and clonic convulsions. The animals lay senseless on their sides, with dyspnea, opisthotonos, and, finally, paresis of the posterior limbs. These phenomena were most marked when large toxic doses of one and a half to two and a quarter grains per kilogramme were administered; the convulsions returned continuously, and affected all the muscles of the body.

The animals finally died when the paralysis reached the respiratory muscles. The effect of eucaine on the central nervous system is therefore at first excitant, and later in toxic doses paralyzing. The paralysis is a central one, as Vinci showed in his experiments upon frogs poisoned with eucaine. The sciatic nerves were exposed and their peripheral ends irritated with the induced current, and the muscles reacted in a normal manner. None of these effects have so far been observed in man. For testing the value of this drug, we selected cases in which an operation, as ordinarily conducted, would be painful. With few exceptions there is no diseased area so painful upon manipulation as an old, inflamed, suppurating toe, the nail of which is partly covered by granulations.

The surgical treatment in all the tabulated cases was in no way different from the treatment they would have received if they had been profoundly anesthetized with ether or chloroform, and the result from a curative point of view was entirely satisfactory. We have operated on a number of cases for the radical cure of ingrowing toe-nail, and in these operations endeavored to secure freedom from pain by the use of certain local anesthetics. After giving them a fair test, we settled upon cocaine as the best agent, and used it almost

[1] Deutsche medicinische Zeitung, No. 34, April 27, 1896.

exclusively up to the time eucaine was introduced. Cocaine acted admirably in most of the cases, but in some it did not produce the desired effect, and in two cases slight toxic symptoms followed the injection of one drachm of a 2-per-cent. solution. By referring to Cases 1, 2, 3, 4, and 5 in the list of operations, it can be seen that we associated with eucaine the use of constriction, ethyl chloride, and pure carbolic acid, each of which produces more or less local anesthesia. Constriction was employed to secure a bloodless operation, and to permit of freezing with a small amount of ethyl chloride. Into the painless frozen tissues above, at the sides, and beneath the nail the eucaine solution was injected by a hypodermic syringe. Freezing the tissues prevented pain when the hypodermic needle was introduced, and after waiting five minutes for the tissues to thaw and for the solution to disseminate, the operation was begun.

The operation consisted in forcing the blade of a pair of scissors under the median line of the nail and cutting the nail completely through in its long axis. Each half of the nail was then extracted by means of a pair of strong bone forceps. The cases were all very severe, and it was considered advisable to remove the entire nail in each patient. The matrix was removed with the scissors and the curette, and the exuberant granulations were excised. When the operation was completed, the denuded surface was swabbed with pure carbolic acid. Carbolic acid not only acts as an antiseptic to the infected area, but prolongs the anesthesia.

In experiments conducted with the end in view of determining the value of various local anesthetics in operating upon ingrowing toe-nail, the same operative method was practised in all the cases, no matter what anesthetic agent was employed. An attempt was made in a certain number of these cases to produce anesthesia before and during the operation by constriction and ethyl chloride, and to produce it after the operation by the application of pure carbolic acid. This method was soon abandoned, as the anesthesia was incomplete, but by the employment of eucaine in addition to the above means, the operation was rendered absolutely painless from the beginning to the end; in fact, none of the patients were inconvenienced by pain, and the first pain that they were conscious of was caused by the redressing twenty-four hours after the operation.

In Case 7 the eucaine was injected around the base of the abscess and into the abscess cavity. The injection into the abscess was a mistake. We would not advise it. It cannot add to the anesthesia to any useful degree, and tends to disseminate infection.

In Cases 6 and 9, the solution was injected to the bone through the gums.

In Cases 10, 11, and 12 the solution was injected above and into the wounds.

In Cases 16, 17, 18, 19, and 20 the solution was injected in each case around the base of the tumor, and in Cases 17, 19, and 20 a few drops were injected into the skin which covered the tumors, the solution being deposited in a line through which the incision was to be made.

The amount of eucaine to be used will depend upon the severity and duration of the operation.

In Case 5 indications pointed to the existence of necrosis of the distal phalanx; and thinking this bone would have to be removed, fifteen grains of eucaine were administered.

Case 13 was a large ulcer, which was covered by exuberant, excessively painful granulations. A great mass of these granulations was removed from the surface of this ulcer by the curette. To this ulcer twelve grains in one-half ounce of distilled water were applied locally.

Case 15 was a badly deformed hand. The deformity was caused by a burn, which destroyed considerable tissue on the dorsal surface of the hand. The dorsal surfaces of the proximal phalanges of the third, fourth, and fifth fingers were exposed. The surface of these bones, as well as the ulcer on the hand, was curetted, and on the denuded areas small grafts of skin were placed. The operation lasted twenty minutes, and the amount of eucaine used was fifteen grains.

When the solution is to be injected, as in cases of punctured wounds, tumors, etc., from one to two drachms of a 5-per-cent. solution will be sufficient in most cases to cause complete anesthesia.

When the drug is to be applied to a raw surface or to mucous membrane, as in ulcers, if the surface is large, it is best to apply one drachm of a 5-per-cent. solution to the wound, then saturate a thin piece of cotton with a like amount of the same solution and allow this to remain in contact with the surface for five minutes. At the expiration of this time the area can be lightly curetted without pain. After the superficial tissues of an ulcer have been removed by light curettement, apply two more drachms of the solution in the same manner. Small ulcers can be treated by the same process by using smaller amounts of the drug.

The time necessary to obtain complete anesthesia varies, as can be seen by the tabulated operations. In eleven of the cases the anesthesia was complete within five minutes after the application. In seven cases it was complete three minutes after the administration. In one case anesthesia was present two minutes after the introduction of a half-drachm of a 5-per-cent. solution, and in one case in

which the tissues were infiltrated with inflammatory products, the anesthesia was not complete before ten minutes.

In toe-nail removals, we should wait five minutes for the anesthesia to be complete, but in Case 5 the introduction of a needle into the tissues three minutes after the administration of the fluid caused no pain. The duration of the anesthesia also varies, even when caused by equal amounts of fluid of the same strength, as seen in Cases 3, 4, 7, 10, 18, and 19. In Case 8 fifteen minims of a 5-per-cent. solution produced a painless area over the surface and in the abscess cavity for one hour, while one drachm of the same solution caused anesthesia for only twenty minutes in Case 7. By referring to the list of cases, it can be seen that the duration of complete anesthesia is not noted in Cases 13, 14, and 15. These were painful conditions, and after curetting the superficial tissues from the ulcers and before the patients were conscious of pain, more of the solution was applied, and, after the last application of the drug was made, curetting was again employed until the deeper structures were reached. When the deeper structures were exposed the parts became sensitive, and more of the solution was used. It will thus be seen that it was impossible to determine just how long the anesthesia lasted.

In some of the cases, slight local effects followed the use of this drug, as shown by Cases 1, 2, and 5.

In the September number of the *International Journal of Surgery*, p. 259, Arthur L. Fuller says, "While eucaine seems to be superior to cocaine in thoroughness of the anesthesia induced, it so hardens the tissues that it is only with the greatest difficulty that sutures can be introduced; a drawback which may possibly be overcome by the use of weaker solutions, if such are found to act as well as the one used in this case." He used twenty minims of a 10-per-cent. solution; the piece of tissue removed was somewhat larger than a quarter of a dollar, and the wound was closed with two sutures. In not one case have we seen this complication.

The tumor in Case 17 of my list had a base which was as large as a dollar. To this case one drachm of a 5-per-cent. solution was injected and fifteen minims applied in the wound. The wound was closed with five sutures, and there was no difficulty in getting the needle through the tissues. Sutures were also applied in Cases 18 and 19.

Besides these cases in which sutures were used, I assisted Dr. Da Costa and Dr. Williams in two operations in which suturing was employed after eucaine had been applied. In Da Costa's case four sutures were used, and in Williams's case six sutures were used. In

neither case was there any trouble in getting the needle through the tissue. Hence I must disagree with Fuller's assertion.

No systemic effects of the drug were observed in any of the cases. The value of eucaine as a local anesthetic can be determined by looking at the list of operations and results in the tabulated cases.

In Case 13 the operation was painless until the deeper structures were reached, when more pain was felt.

In Case 17 there was slight pain for a moment, caused by incising a small nerve. The duration of the pain was only a few seconds.

This drug is a valuable addition to our resources. It is rapid in action, safe, produces positive and prolonged anesthesia, causes no serious after-effects, and can be rendered aseptic by boiling. It is the best local anesthetic before the profession. It has been used largely by the ophthalmologists.

The appended table presents the cases observed in the Jefferson Hospital.

Table of Cases of Anesthesia by Eucaine Hydrochlorate.

Case.	Diagnosis.	Treatment.	Amount of Eucaine Used.	Time for Complete Anesthesia.	Duration of Complete Anesthesia.	Duration of Operation.	Local Effect.	Systematic Effect.	Result.
1	Ingrowing nail on the big toe.	Constriction, ethyl chloride; total extirpation of the entire nail, matrix, and granulating tissue; eucaine carbolic acid.	One drachm of a 2-per-cent. solution hypodermically.	5 minutes.	20 minutes.	15 minutes.	Slight hyperemia for two days.	Negative.	Painless.
2	Ingrowing nail on the big toe.	Constriction, ethyl chloride; total extirpation of the entire nail, matrix, and granulating tissue; eucaine carbolic acid.	One drachm of a 2-per-cent. solution hypodermically.	"	"	12 minutes.	Marked congestion of the toe; capillaries dilated for two weeks.	"	Painless.
3	Ingrowing nail on the big toe.	Constriction, ethyl chloride; total extirpation of the entire nail, matrix, and granulating tissue; eucaine carbolic acid.	One drachm of a 5-per-cent. solution hypodermically.	3 minutes.	15 minutes.	10 minutes.	Negative.	"	Painless.
4	Ingrowing nail on the big toe.	Constriction, ethyl chloride; total extirpation of the entire nail, matrix, and granulating tissue; eucaine carbolic acid.	One drachm of a 5-per cent. solution hypodermically.	5 minutes.	10 minutes.	15 minutes.	"	"	Painless.
5	Ingrowing nail on the big toe and diseased matrix.	Constriction, ethyl chloride; total extirpation of the entire nail, matrix, and granulating tissue; eucaine carbolic acid.	Fifteen grains in two drachms of distilled water hypodermically.	3 minutes.	20 minutes.	20 minutes.	Small amount of tissue sloughed.	"	Painless.
6	Abscess of the jaw.	Incised to the bone; eucaine.	Half drachm of a 5-per-cent. solution hypodermically.	"	10 minutes.	15 seconds.	Negative.	"	Painless.
7	Abscess of the leg.	Incised, curetted, swabbed with pure carbolic acid, and packed with iodoform gauze; eucaine.	One drachm of a 5-per-cent. solution hypodermically.	10 minutes.	20 minutes.	5 minutes.	"	"	Painless.
8	Abscess of the face; tubercular.	Incised, curetted, swabbed with pure carbolic acid, and packed with iodoform gauze; eucaine.	Fifteen minims of a 5-per-cent. solution hypodermically.	3 minutes.	1 hour.	"	"	"	Painless.
9	Abscess of the jaw.	Incised to the bone; eucaine.	Half drachm of a 5-per-cent. solution hypodermically.	2 minutes.	5 minutes.	10 seconds.	"	"	Painless.
10	Infected wound of the thumb.	Incised, curetted, swabbed with pure carbolic acid, and packed with iodoform gauze; eucaine.	One drachm of a 5-per-cent. solution hypodermically.	5 minutes.	minutes.	3 minutes.	"	"	Painless.

TABLE OF CASES OF ANESTHESIA BY EUCAINE HYDROCHLORATE.—*Concluded.*

Case.	Diagnosis.	Treatment.	Amount of Eucaine Used.	Time for Complete Anesthesia.	Duration of Complete Anesthesia.	Duration of Operation.	Local Effect.	Systematic Effect.	Result.
11	Infected wound of the hand.	Incised, curetted, swabbed with pure carbolic acid, and packed with iodoform gauze; eucaine.	One drachm of a 5-per-cent. solution hypodermically.	5 minutes.	10 minutes.	3 minutes.	Negative.	Negative.	Slight pain.
12	Infected wound of the foot.	Incised, curetted, swabbed with pure carbolic acid, and packed with iodoform gauze; eucaine.	Half drachm of a 5-per-cent. solution hypodermically.	"	"	"	"	"	Painless.
13	Tubercular ulcer of the hand.	Curetted; applied silver nitrate; eucaine.	Half ounce of a 5-per-cent. solution locally.	3 minutes.	. . . . .	10 minutes.	"	"	Painful.
14	Ulcer on the chest following an abscess.	Curetted; packed with iodoform gauze; eucaine.	Half drachm of a 5-per-cent. solution locally.	5 minutes.	. . . . .	1 minute.	"	"	Painless.
15	Ulcer of the hand following a bad burn.	Curetted and grafted skin; eucaine.	Fifteen grains in two drachms of distilled water locally.	"	. . . . .	25 minutes.	"	"	Painless.
16	Epithelioma of the nose.	Excised and applied the Paquelin cautery; eucaine.	Two drachms of a 5-per-cent. solution hypodermically.	3 minutes.	20 minutes.	"	"	"	Painless.
17	Large sebaceous tumor of the face.	Excised and inserted five sutures; incised a small nerve; eucaine.	One drachm of a 5-per-cent. solution hypodermically; fifteen minims locally.	5 minutes.	"	20 minutes.	"	"	Slight pain.
18	Small sebaceous tumor of the leg.	Removed and inserted three sutures; eucaine.	One drachm of a 5-per-cent. solution hypodermically.	"	15 minutes.	10 minutes	"	"	Painless.
19	Small sebaceous tumor of the scalp.	Punctured and excised the sac; three sutures; eucaine.	One drachm of a 5-per-cent. solution hypodermically.	"	5 minutes.	6 minutes.	"	"	Painless.
20	Ganglion of the wrist.	Punctured and scraped the interior of the sac; eucaine.	Twenty minims of a 5-per-cent. solution.	3 minutes.	7 minutes.	2 minutes.	"	"	Painless.

MEMORANDUM.

TRAUMATIC ANEURISM OF THE POSTERIOR TIBIAL ARTERY; NOTES OF A CASE.

THE patient in question, a lad, 11 years of age, came under observation in the out-patient department of the Episcopal Hospital. The history briefly told is as follows: Six weeks ago the boy was struck by a brick, just behind the internal malleolus of the left foot. With the exception of a minute wound of the integument, there was no evidence of any external injury. Immediately blood flowed in a small jet from the wound, until mechanically checked by the application of some crude dressing. During the six weeks that have elapsed since the accident, a swelling about the size of a walnut has formed at the seat of injury, just behind the internal malleolus. The situation and size of the swelling prevented the wearing of a shoe, on which account chiefly the boy seeks relief.

An examination of the case revealed a swelling of size, shape, and location as above described. To the touch it was of semisolid consistency, and pressure thereon elicited no pain.

A diagnosis of hematoma was made and its removal recommended.

The patient consenting, a free incision exposed the tumor, which proved to be composed of blood-clots enclosed in a sac. On turning out the clots, free hemorrhage ensued. Pressure above the wound, however, promptly and effectually controlled it.

On close inspection it was seen that the hemorrhage had its origin from a tear in the walls of the posterior tibial artery. A catgut ligature was applied on the distal and proximal sides, and the external wound closed with silkworm-gut sutures.

At the expiration of a week the stitches were removed, the wound healing by first intention. The subsequent history of the case is uneventful.

Remarks.—From the etiology of the case and from the fact that this aneurism had a sac, it properly belongs to that subdivision, the so-called circumscribed traumatic aneurism. This class is met with chiefly in the scalp, hands, and feet. The treatment carried out in this case was that recommended, generally, in cases where the artery injured is small and easy of access,—namely, evacuation of clot and application of ligatures on distal and proximal sides of the seat of injury. Left alone, the aneurism may terminate in one of three ways.

Either spontaneous cure may occur by extension of the organized clot into the vessel, or, the aneurism enlarging, may burst the sac, thus forming a diffuse traumatic aneurism, or, finally, possible infection with pyogenic microbes may result in the formation of an abscess, the bursting of which may be followed by the discharge of pus, blood-clots, and more or less profuse hemorrhage.

CHARLES H. FRAZIER, M.D.,
Surgeon to the Out-Patient Department, University Hospital.

CLINICAL DEPARTMENT.

ST. CHRISTOPHER'S HOSPITAL FOR CHILDREN.

[Service of DR. H. C. DEAVER.]

EPIPHYSEAL SEPARATION OF THE HUMERUS.

J. A. Z., male, aged 5 months, was admitted to St. Christopher's Hospital for Children on February 20. Four days previously it had been christened, and the parents said that many people picked the child up by the arms. Since that time he had cried continually. The shoulder was noticed to be swollen the morning following the christening. On admission the left shoulder presented a very much swollen appearance, the swelling reaching from the insertion of the deltoid muscle to the middle of the clavicle; the axilla also was very much swollen. The skin was tense and red, and there was pitting upon pressure.

Over the tendon of the biceps there was a point of fluctuation, and an abscess appeared to be "pointing."

The head of the humerus was felt in its normal position, yet there was decided crepitus and great pain upon motion. A provisional diagnosis was made of fracture of the humerus. Temperature was $104\frac{4}{5}°$ F.; the pulse 180; and the respirations 40. Dr. H. C. Deaver saw the case and opened the abscess, which contained about two ounces of pus. The humerus was intact, but the upper epiphysis was found to have separated.

Pyemia developed, and the child died about two weeks from the date of the injury.

The case, to the writer, seems undoubtedly to have been one of traumatic separation of the upper epiphysis of the humerus, due to rough handling or simply lifting the child up by the arms.

J. GURNEY TAYLOR, M.D.,
Physician to the Out-Patient Department,
St. Christopher's Hospital for Children.

ALUMNI NOTES.

Opening of the Medical, Dental, and Veterinary Departments of the University.

The exercises attending the opening the Medical, Dental, and Veterinary Departments of the University were held in the College Chapel at noon on October 1, 1896. A short address was delivered by the Provost, Mr. C. C. Harrison. Among other things the Provost said,—

"There have been, I am able to say, but few changes in our ranks since last I met you. Dr. Billings has, as you all know, been called to New York as the head of the Associated Libraries there, and Dr. Abbott has been elected Professor of Hygiene in his stead. I commend him to your cordial attention. So that there might be more perfection of organization, Dr. Marshall, the respected Dean of the Medical Department, has been appointed by the Trustees, Dean of the Department of Hygiene, and I commend him, likewise, to your thoughtful help in the additional duties which he has undertaken.

"*Gentlemen of the Dental School,*—A year ago, from this place, I made the promise that the University of Pennsylvania should soon have, for the benefit of its students, dental laboratories of the first class, and that the profession of dentistry should be treated by the University precisely as any other professional department. I have never been able to see why the care of the teeth and the mouth and its adjacent parts should not be considered as important as the care of the eye, or the ear, or of any other part of the body, and you will doubtless do myself and my associates the justice of recognizing that we have already gone a long way towards the fulfilment of our promise. We have studied every important dental building devoted to teaching in the United States, and while, of course, I am unable to say that the building which we are now erecting will be the best in this country,—I mean best in the sense of the facilities which will be there offered,—yet I am told by members of our dental faculty that, as it is the latest, so it will be—as it ought to be—the best, and worthy of the University of Pennsylvania. To the present curriculum, I shall venture to ask the Trustees of the University to add the study of oral surgery, and to assign adequate clinical facilities at the hospital of the University, and to appoint the best person whom we can find to an assistant professorship. We have the subject fully before us, and we have the man in our minds.

"*Gentlemen of the Medical School,*—I feel that I can almost make you the same promise with regard to the new medical laboratories of the University as I made to the Dental Faculty and to the dental students a year ago, for I am encouraged to believe that just as soon as the prevailing national excitement is allayed—a condition which has drawn the mind of every one from all but one subject —the Trustees of the University will be enabled to begin, without any further delay than the exhaustive study of construction will require, the erection of new medical laboratories,—a building which will include a pathological laboratory, a bacteriological laboratory, a laboratory of pharmacology, a laboratory of physiology, and, in time, a building to accommodate the anatomical dissecting-rooms, so that hand in hand with the increase in the requirements for admission and for graduation will

be afforded here the largest opportunities for both theoretical and practical instruction.

"*Students of the Department of Veterinary Medicine*,—You are to be congratulated upon having chosen a school of such high standing as our Department of Veterinary Medicine in which to receive your professional training. The services of your profession are of the highest importance and value, in alleviating the ills of the lower animals and to the public in the inspection of meat and milk, as well as to the immense proprietary live-stock interests of our country.

"Upon all your minds I wish to impress not only the unusual opportunities which you are to have here, but the nobility of your calling. As the President of Harvard recently said before you all, there is 'an entrancing prospect of usefulness and honor. To young men are offered the largest opportunities for disinterested, devoted, and heroic service. The times are passed when men had to go to war to give evidence of endurance, of courage, of capacity to think quickly and well under pressure of responsibility and danger. The fields open to the physician and surgeon now give ample scope to these lofty qualities.'

"You are all to follow a profession, and not a trade, and your profession, if you take it up in a generous spirit, in which every profession should be taken up, will not only profit you, but ennoble you. Every life is noble in proportion as it is helpful to other lives, and it is no small thing to have the privilege of being helpful to others every day. Much of the work done in the world is and must be mere drudgery; much of it is done with no end in view but pecuniary reward. But surely there is no part of your coming work which need be done with no higher motive; no part which may not bring with itself a reward quite apart from a material one.

"There ought to be a pleasure—and a very great pleasure—in the work itself. It is a pleasure to do almost anything well; it is doubly a pleasure to do well what is felt to be well worth the doing. I hope, young men, that you will hold in high honor your profession. I hope you will never fall to the level of regarding it *only* as a means of livelihood. One must live; but, after all, is life worth living when one has lost out of it the beauty of high aspiration, an earnest endeavor, and the dignity of self-sacrifice?

"Far be it from me, in contrasting the trades and the professions, to indicate that in the humblest walk in life a man may not so live as to be worthy of all honor. All work may be ennobled. Nevertheless, there are some positions in life where one has a better opportunity to feel that he is of real service to mankind than in others. Happy the man who is called to such a position and who feels that he has prepared himself to fill it as he ought to. The University which has helped you and others will feel disappointed if you do not recognize and esteem your high privilege, and thus bring honor upon yourselves and upon her.

"I wish you a very successful year."

The General Alumni Society.

The General Alumni Society of the University is being carried on with great success, its membership at present being but few short of a thousand. Owing to the newness of the organization, little work has been done for the University, but as soon as the society gets in good running order, it will undoubtedly be an aid to it both financially and socially. Meetings are held every month, except during the summer, but as yet no meetings have been held this fall. At the

Alumni dinner given last year, the great number of Alumni and guests that were present show the interest in the work.

The head-quarters of the society are in the Franklin Building, and there all the matriculates of the University (except medical and dental) since its founding are kept, and also their addresses. Constant communication is kept up with members of the society who live in various parts of the world, and in this way news of the University is spread around.

The following resolution looking to a representation of the several departmental Alumni Societies upon the Executive Committee of the General Alumni Society has been unanimously adopted:

"*Resolved*, That in order to promote the solidarity of the Alumni interests of the University, the secretary of the General Alumni Society is hereby instructed to place himself in communication with the proper officers of the respective departmental Alumni Associations, and to inform them that, if it be agreeable to them, the General Alumni Society would be pleased to have one member of the group of three representing each department in the Executive Committee, named by the corresponding department association, and requesting that a committee be appointed from each society or its board of officers to confer with representatives of the Executive Committee of this society to arrange the manner in which said nomination shall be made."

Membership in Houston Club.

The enrolment of members in Houston Club up to date, for the ensuing year, is as follows:

Active members	440
Associate members	36
Sustaining members	50
Total	526

Besides this, about 260 new men have applied for admission to the club, and it is probable that all of these will be elected to active membership.

Necrology.

Dr. Henry Hooper Mitchell died in Elkton, Md., on September 27, 1896. He was born February 18, 1820, began the study of medicine with Dr. A. A. Evans, of Elkton, and afterwards graduated from the University of Pennsylvania.

EDITORIAL.

COMPLICATIONS IN VARICELLA.

In a recently-published text-book on children's diseases the author sums up the prognosis of varicella as follows: "The outlook for chicken-pox is always favorable. There is no other disease so uniformly mild in its course and happy in its ending. There are no complications and no sequelæ for the physician to guard against." In the last few years a sufficient number of cases of complicated varicella has been recorded to call in question the accuracy of the above statement; that chicken-pox is the mildest of all infections is undoubtedly true, but experience teaches that it is not absolutely harmless. The fact that the disease is so generally mild is apt to foster an over-confidence in the result, and to lead to a less careful supervision of treatment than is demanded by every infection, no matter how trivial its manifestations.

In 1884 Henoch published four cases of varicella complicated with nephritis, one of which terminated fatally, and since then similar cases have been reported by many observers, including Hoffmann, Augier, Newski, Rasch, Rachel, Vichmann, Schwab, Hagenbach, Demme, Unger, and Högyes. Högyes and Hagenbach each report a fatal case. Pesa (*Riforma Medica*, November 2, 1892), in an outbreak of twenty-six cases of varicella, noted nephritis as a sequel in two of them.

Cassel (*Archiv für Kinderheilkunde*, Band XVII, s. 371) records six cases in an epidemic of twelve occurring in Berlin, in which nephritis developed during the stage of vesication. Three of these cases died, one directly from the nephritis, and the other two of pneumonia. These reports emphasize the importance of repeated urinary examinations in all infections, even in varicella.

Jonathan Hutchinson (*Medico-Chirurgical Transactions*, Vol. XV, 1892) was the first to call attention to a complication of varicella characterized by the development of gangrene of the skin at the site of the vesicles. He termed the condition varicella gangrenosa, and since the appearance of his paper numerous European observers have reported similar cases. At least four of such cases have been reported in America, one each by Woodward, Büchler, Spivak, and

Griffith. Dr. Griffith's case was complicated also with diphtheria and rubella, and is reported in full on page 837 of the MAGAZINE for August of this year.

Paralysis is a rare sequel of varicella. Gay (*British Medical Journal*, March 31, 1894) reports a case of peripheral neuritis following varicella, and a case of paraplegia of spinal origin is reported by Marfan (*Le Bulletin Médicale*, May 12, 1893).

Boucheron (*La Presse Médicale*, February 17, 1894) first drew attention to varicellous affections of the larynx, bronchi, and lungs. "Certain cases," he says, "show that not only stomatitis, but laryngitis, bronchitis, and broncho-pneumonia, and, perhaps, even pleurisy may be of a varicellous nature." He narrates the history of a little girl who was seized with varicella and died about the twentieth day, in consequence of laryngeal spasm. At the necropsy nothing was found to explain the spasm except vesico-pustules on the laryngeal mucous membrane similar to the cutaneous eruption. Marfan and Hallé (*Revue Mensuelle des Maladies de l'Enfance*, Tome XIV, No. 1) report two cases somewhat similar. The first recovered after tracheotomy had been performed, the second died on the eighth day of broncho-pneumonia. The autopsy in the latter case revealed on the right lower vocal cord an ulcer the size of a lentil. The authors remark that the laryngeal lesion of varicella usually appears early, either at the onset, or very shortly afterwards. This fact is an aid in differentiating from laryngitis due to secondary infection, although only a bacteriological examination can justify the exclusion of a coexisting diphtheria. Otitis media, noma, and orchitis have also been reported as following chicken-pox.

In addition to local complications, varicella occurring as a primary affection may, by lowering the resisting powers of the subject, invite the development of other infections; thus, measles, rubella, diphtheria, scarlet fever, and whooping-cough have each been found in association with this disease.

THE NUMBER OF STUDENTS IN THE FIRST-YEAR CLASS OF THE MEDICAL DEPARTMENT.

Although the tuition-fee has been increased to $200 a year, and the standard of admission has been raised, there will be more than 250 students in the first-year class during the present session.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

Statistics of Diphtheria.

Sevestre (*Gazette Médicale de Strasbourg*, 1896, No. 7) states that all the children recovered from diphtheria were watched for many weeks or months after they left the hospital. All patients who had symptoms of diphtheria were injected with antitoxic serum (Reux) immediately upon their entrance into the hospital and a bacteriologic examination made afterwards. The first injection was usually twenty cubic centimetres and was rarely repeated, except in croup, when a second and sometimes a third injection of ten cubic centimetres was made.

The other treatment given was in no sense specific, but what ordinary sense would dictate.

During 1895 the following were the admissions and results :

	Total.	Mortality.
Total admissions	1140	
Deaths	158	13.85 per cent.
Deaths after 24 hours	87	8.13 "
Non-Diphtheritic.		
Admissions	262	
Deaths	25	9.54 per cent.
Deaths after 24 hours	10	4.04 "
Diphtheritic.		
Admissions	878	
Deaths	133	15.14 per cent.
Deaths after 24 hours	77	9.35 "
Pure Diphtherias.		
Admissions	392	
Deaths	39	9.94 per cent.
Deaths after 24 hours	23	6.11 "
Diphtheria Complicated with other Conditions.		
Admissions	486	
Deaths	94	19.34 per cent.
Deaths after 24 hours	54	12.11 "

The total mortality in the same hospital in cases of diphtheria is as follows:

Date.	Admissions.	Deaths.	Mortality.
1890	1002	560	55.88
1891	957	503	52.56
1892	997	475	47.64
1893	1015	492	48.47
1894	1042	226	21.68
1895	1140	158	13.85

The following laryngeal cases and results are also given:

	Total.	Mortality.
Total cases of croup	408	
Treated without operation	163	
Deaths	23	14.11 per cent.
Deaths after 24 hours	9	6.04 "
Intubations	229	
Deaths	62	27.07 "
Deaths after 24 hours	36	17.73 "
Tracheotomies after intubation . . .	16	
Deaths	14	
Deaths after 24 hours	6	

THE DIAGNOSIS OF TUBERCULOSIS FROM THE MORPHOLOGY OF THE BLOOD.

HOLMES (*New York Medical Record*, Vol. IX, No. 5, 1896) sums up an apparently careful article as follows:

That the diagnosis of tuberculosis, from the morphological appearance of the blood, rests upon the hypothesis that each individual has a biological prototype in the leucocytes of his own blood.

That the leucocytes are independent organisms with functions analogous to the larger organisms.

That they pass through the stages of growth and decay.

That disintegration may occur at any age.

That they are tissue-formers.

That tuberculosis is characterized by tissue disintegration.

That in tuberculous blood there is abundant cell-disintegration, premature development, premature decay, and more or less deviation from the normal percentages of the various types of cells.

If there is marked disintegration of the leucocytes, we can predict a similar condition of the larger organism.

A diagnosis of tuberculosis can be made from the blood earlier than by any other means we now possess.

A diagnosis may be made from the blood alone in a well-marked case.

Thus far no other pathological condition has been found which presents the similar blood appearances.

THE PRESERVATION OF URINARY SEDIMENTS.

GUMPRECHT (*Centralblatt für innere Medicin*, No. 30, 1896) details a method of preserving urinary sediments which he has employed for a long time and always

with most satisfactory results. The urine is first subject to centrifugation until a sediment has been deposited, when the liquid above is decanted off. In case red blood-corpuscles be present, the morphatic elements are fixed by the addition to the sediment of concentrated watery solution of bichloride of mercury (one to twenty). The whole is well shaken, and after about five minutes the sediment is reprecipitated by centrifugation, and subsequently washed five or six times with water, each washing being followed by centrifugation and decanting of the liquid. In case no erythrocytes be present this fixing with sublimate is unnecessary. To the sediment then, whether it be freshly precipitated or already fixed in sublimate, there is added 2- to 10-per-cent. solution of formalin in distilled water, and the whole well shaken. It is then put away and may be examined at any time. Sediments preserved a year are scarcely distinguishable from fresh ones. Cells retain their shape, nuclei are well preserved, likewise tube casts of all kinds and sizes. Fat drops and leucocytes attached to casts are unaltered. Micro-organisms are readily discernible, and erythrocytes are round, homogeneous, biconcave. The sediment may be readily stained. To avoid granular precipitations, it is well to wash once with physiological salt solution, the sediments of urine containing much albumin. This is done immediately after the first precipitation. Sediments containing quantities of urates should also be washed with ether, warm water, or concentrated-borax solution.

Nephritis in Infantile Scurvy.

Thomas (*Boston Medical and Surgical Journal*, Vol. ix, No. 3, 1896) says,—

(1) In infantile scurvy the kidneys are probably affected in a large proportion of the cases, at least during the acute stage of the disease.

(2) That the catarrhal nephritis is probably caused by the effect upon the kidneys of an irritant in the blood.

(3) That cases of infantile scurvy occur in which the renal symptoms are the first or perhaps the only ones observed.

(4) That in suspected cases, the condition of the urine will often allow of an earlier diagnosis than any other sign.

The Escape of Diphtheria Bacilli into the Blood and Tissues.

Kanthack and Stephens (*Journal of Pathology and Bacteriology*, Vol. iv, No. 1, July, 1896) refer to the work of other investigators and detail the results of their own studies. Personally they frequently found the diphtheria bacillus in the cervical and bronchial glands of fatal cases of diphtheria. In twenty-six fatal cases the diphtheria bacillus was found in the lungs in twenty-six; in twenty-one cases in which the spleen was examined, it was found in ten; and in three cases in which the kidney was investigated, it was found in two. They believe that in fatal cases there is an extensive escape of the bacillus into the lungs and other organs; that the bacilli readily escape into the lungs and are usually there present in large numbers; that the broncho-pneumonia complicating diphtheria is not pyococcal, but is often, if not generally, of diphtheritic nature, and is, as a rule, associated with or preceded by laryngeal diphtheria, to which it more especially owes its origin than it does to a tracheotomy. The diphtheria bacilli may escape from the original seat of infection by direct transference, as to an open wound; along existing passages from the seat of infection to the eye, ear, lungs, etc.; along the lymphatics to the cervical and bronchial glands, etc.; through the circulation to the liver, spleen, kidney, etc. Clinically, the experiments are thought to be of value, since they prove

the necessity of using antitoxine energetically in all serious cases of diphtheria, the amount of toxine to be counteracted being always enormous when the bacilli have gained access to the lungs and other organs.

A Case of Pernicious Anemia with Distention of the Large Intestine.

Stockman (*Edinburgh Hospital Reports*, Vol. iv, 1896) reports the case of a woman delivered of a healthy child in November, 1895, after a normal labor, during which she lost less than the usual quantity of blood. She was always well until two months prior to her *accouchement*, when she began to grow weak and pallid and to be greatly troubled with flatulent distention of the abdomen. These conditions increased in severity, and the patient became much emaciated. Physical examination of the heart, lungs, liver, and spleen was negative. The abdomen was much distended, and the peristaltic movements of the bowel very active. From the presence of contracting bands there was little difficulty in recognizing the large intestine. Hemoglobin, 24 per cent.; erythrocytes, 1,680,000; later, hemoglobin, 20 per cent.; erythrocytes, 920,000. Treatment consisted of iron, arsenic, and careful dieting. The patient died February 28, 1896. There were found at the necropsy dilatation of the stomach and enormous distention of the ascending and descending colon. The transverse colon and rectum were normal. No obstruction. The ante-mortem suspicion that the excessive anemia was due to malignant obstruction of the large intestine was not borne out by the autopsy. Although the clinical symptoms were those of pernicious anemia, there was no excess of iron in the liver or spleen. The history shows that the distention of the bowel was distinctly traceable to the excessive flatulence from which the patient suffered during her pregnancy.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

A New Operation for the Radical Cure of Inguinal Hernia.

George Sully Vaughan (*Journal of the American Medical Association*, July 25, 1896) describes his operation for hernia. The cord is placed deep next the peritoneum and passes through the abdominal wall (down over the symphysis pubis) both obliquely and where it is strongest, more than half of the circumference of the anterior opening being formed by bone and tendon. Another advantage is that the two ends of the inguinal canal are placed nearer on the same level, thus obviating the bad effects of gravity. The technique is as follows:

(1) Make an incision over the inguinal canal from the internal abdominal ring to the centre of the symphysis pubis through the skin and fascia; then split the fibres of the aponeurosis of the external oblique, exposing the cord and hernial sac.

(2) Separate the sac from the cord, ligate or sew across well within the internal ring, and cut off the redundant part.

(3) Divide the conjoined tendon through its muscular part four or five centimetres above its insertion, including the internal pillar of the ring, down to the peritoneum, avoiding the deep epigastric artery. Separate by blunt dissection the conjoined tendon from the rectus and pyramidal muscles down to the pubic bone, and place the cord in this position between the conjoined tendon and the rectus. The cord still passes through an oblique canal at its anterior portion, as the conjoined tendon overlaps the rectus and pyramidalis for two and a half centimetres or more, being inserted in front of these muscles. Unite the divided ends of the conjoined tendon and of the internal pillar with mattress sutures, and accurately approximate them with continuous or interrupted sutures.

(4) Close the old inguinal canal with interrupted sutures, uniting Poupart's ligament to the conjoined tendon, and in the outer part including the transversalis fascia over the cord. Two or three of these sutures are passed through the conjoined tendon to include the edge of the rectus.

(5) Unite the superficial structures with a continuous suture and the skin with a subcuticular suture.

Kangaroo tendon is advised to be used throughout the operation.

Malignant Pustule of the Face.

Erdmann (*New York Medical Journal*, August 15, 1896) reports the case of a man, aged 50 years, stevedore, who, while smoking his pipe, had his cheek slightly burned by a spark. A small red spot resulted, but no discomfort. Eight days later he noticed a small pimple on his cheek at about the same spot where he had been burned. On the sixteenth day the pimple had become a running sore, about the size of a quarter dollar, with angry edges and a black centre. There were a number of blisters on the edge. Two days afterwards he applied to Governeur Dispensary and was treated with acetanilide. On the nineteenth day the central slough was fully as large as a 50-cent piece, and the vesicular edges extended fully an inch beyond. The eye was almost closed, and the forehead on the right side edematous. The pulse was 78 to 82, the temperature and respiration normal, and the patient in excellent condition and at work during the day. Examination demonstrated the presence of numerous anthrax bacilli. The ulcer was dressed with 1 to 40 carbolic solution and the patient allowed to go about. Under this dressing the swelling disappeared in forty-eight hours, and no further extension of the ulcer was observed. On the twenty-first day the slough was cut away and the actual cautery applied over the whole area. Upon removing the slough numerous small foci, resembling pus, were exposed. From this time on the patient made a rapid recovery. There was no history of handling of wool or hides.

A Method of Temporarily Closing the Opening after Gastrostomy or Enterotomy.

Cripps (*British Medical Journal*, June 6, 1896) describes an ingenious device for temporarily closing the opening in gastrostomy or enterotomy, and thus keeping the adjacent parts clean and not excoriated. A circular disk of sheet rubber is taken of a diameter equal to double the size of the opening to be closed. Through this disk is passed on each side of the centre a No. 4 strand of silk. The disk is to be rolled up and passed through the opening into the bowel by means of a slender dressing forceps, the two ends being left hanging out. A roll of lint, stiffened with a pin or piece of wire, is then laid across the opening and the two ends of silk tied

over it. By this means the rubber disk is firmly pressed against the inner side of the opening, and it is thereby occluded. The exact size and thickness of the disk is to be ascertained by experience. He has found this method absolutely effectual in keeping the patients dry and clean.

A Rapid Procedure of Intestinal Suture.

Jaboulay and Briau (*Lyon Medical*, April, 1896) describe their perfected method of circular intestinal suture. It is an outgrowth of one performed for resection of the intestine in 1891, and for gastro-enterostomy in 1892. Two threads are passed through the divided ends of the intestine, one at the mesentery and the other directly opposite; pulling on these threads causes the intestinal walls to lie side by side. The posterior edges are then sewn together by a Glover continuous suture in two rows. The first row unites the serous and muscular layers to each other, and the second unites the mucous layers on each side. The anterior half of the circumference of the bowel is then united by a double row of continuous suture; the first of which unites the mucous surfaces and the second or the outside the muscular and peritoneal coats. The two threads first introduced are then tied, and the operation is complete.

A Successful Case of Operative Treatment of Ulcer of the Stomach.

Parker (*Annals of Surgery*, June, 1896, p. 733) operated on a woman, aged 25 years, suffering from gastric ulcer. For two months she had been unable to eat solid food without pain in stomach, there was also occasional vomiting and great loss of flesh. There was a distinct point of tenderness in the epigastrinm and also an induration two to four inches in diameter.

The day before the operation the stomach was carefully washed out and a large enema given. This was repeated on the following day before the operation. A three-inch incision was made in the median line just below the ensiform cartilage. Through the incision the contents of the stomach and mucus escaped. The exposed area was thoroughly washed out with salt solution and packed with sterile gauze. The wound was dressed daily and in a week began to granulate. At the end of a week milk was given by the mouth. She was nourished for the first five days entirely by the rectum. She was discharged from the hospital with a small fistula, which healed entirely two months later. At present the patient is enjoying good health.

Preventive Serotherapy in Tetanus.

Bazy (*Revue de Chirurgie*, 1896, p. 331), having had four cases of tetanus in his service in one year, decided to use preventive inoculations; this he did in twenty-three cases, and no more tetanus occurred.

Lucas-Championnière thought the results of Bazy were not of much value, while he had seen one case which recovered after injections of serum that were not sufficient to authorize preventive injections, particularly as the disease had become so rare.

Berger remarked on the different results obtained by injections in various countries. While in Italy and England frequent enough successes had been obtained, in Germany there were still fewer, and in France, with the serum furnished by the Pasteur Institute, the case cited by Championnière was the only successful one. He thought the service at the Bicêtre Hospital was prolific as regards tetanus. He had

had three cases while connected with it, but thought that preventive injections were not required.

Marchand only observed one case of tetanus in six years at the Hôpital Saint-Louis. He did not believe in giving injections in all traumatic cases.

Quénu, during the six years that he had been at the Cochin Hospital, had not seen a single case.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Maragliano's Serum Treatment of Pulmonary Tuberculosis.

Zaeslein (*Deutsche medicinal Zeitung*, July 27, 1896) contributes an interesting article on the serum treatment of pulmonary tuberculosis, which consists, according to the author, in introducing into the human body substances which either directly oppose the germ of the disease or lead to the formation of antitoxins. It has been shown by Behring, Wernicke, Knorr, Neimann, Babes, Broca, and Maragliano that the serum of animals systematically treated with tuberculous matter (cultures of tubercle bacilli or tuberculin) annuls the action of tuberculin. For inoculation of animals, Maragliano uses the filtrate of cultures that have been heated as well as that of those that have not been heated. In order to secure a unit of uniform toxicity the filtrates are concentrated to such a degree that a cubic centimetre will contain 100 toxic units,—*i.e.*, a cubic centimetre for each 1500 grains of the guinea-pig's weight will be required to kill the animal. Dogs, horses, and asses are selected for the inoculations, which last about six months. A mixture consisting of three parts of the heated and one part of unheated infiltrate is injected daily in ascending doses, until a maximum of forty to fifty milligrammes for each kilogramme of the animal's weight is reached. Before the animal is bled three or four weeks are allowed to elapse, in order to make sure that the serum contains no remnant of the toxins injected.

The Action of the Serum in Healthy Subjects.—The serum has little effect on temperature, circulation, or urine. Large doses may cause transient peptonuria, but never albuminuria or glycosuria. The blood often shows a marked increase in the leucocytes.

The Action of the Serum in Tuberculous Subjects.—According to Zaeslein, the injections are followed by a lessening of cough, lowering of temperature, diminution and even disappearance of the areas of dulness, an increase in appetite, and a gain in weight. These effects are observed after other measures have failed, and whether or not an hereditary tendency to the disease exists. In some instances good results are noticeable in a few days and usually within a month, unless the disease is far advanced. Maragliano has employed the serum treatment in 450 cases. Of 322 febrile cases, the fever disappeared in 176, the local signs disappeared in 27 per cent. of all the cases, were improved in 41 per cent., remained stationary in 30 per cent., and were aggravated in 6 per cent. The tubercle-bacilli disappeared in 43.2 per cent. There was a gain in weight in 57 per cent. The usual

dose was one cubic centimetre every other day, as some people are sensitive even to this amount, the author recommends half a cubic centimetre as the initial dose. The serum should be continued until a cure results, then bi-weekly injections should be employed, and subsequently a weekly injection for one year. The back and sides of the chest are the parts selected for the injections. No untoward effects, local or general, are said to have followed the injections.

The Preparations of Strophanthus.

H. C. Wood and W. S. Carter (*American Journal of Pharmacy*, July, 1896) state that the United States Pharmacopeia recognizes only one preparation of strophanthus,—namely, the tincture. As it is often desirable to give strophanthus in pill form, a research was made to test the activity of the best commercial strophanthin, and also of an extract. From a series of experiments made on mammals, the authors conclude that the extract of strophanthus and strophanthin are active preparations, and that they should be introduced into the Pharmacopeia. In conducting the experiments they also demonstrated that strophanthus has little action on the vasomotor centres compared with what it has upon the heart and vessel walls. In reference to strophanthin they found that it had a much greater effect on raising the arterial pressure than the extract, and therefore confirm the conclusions of Rothziegel and Koralzewski, who demonstrated clinically the value in cardiac disease of strophanthin in daily doses of one-sixty-fifth to one-twentieth of a grain.

Glycerin in Certain Affections of the Stomach.

Sawyer (*Lancet*, July 4, 1896) remarks that some years ago Dr. Sydney Ringer recommended the administration of glycerin by the mouth in certain affections of the stomach. Acting upon his suggestion, he has since treated many cases of painful gastric digestion, such as are usually attributed to subacute or chronic catarrh of the gastric mucous membrane, with glycerin with satisfactory results. So far as he has seen, this employment of glycerin is not widely extended in professional practice, and he has not noticed further reference to it in the periodicals, The familiar routine seems to be a ringing of changes upon bismuth, alkalies, acids, and digestives. Many cases of gastric maladies of the kind indicated yield to glycerin; he gives a drachm, a drachm and a half, and sometimes even two drachms, some with a little of simple bitter stomachic tincture, diluted to an ounce with water, thrice daily, between meals.

The Clinical Use of Thyroid Extract, Pituitary Body, Suprarenal Capsules and Bone-Marrow.

Cabot presents a somewhat elaborate report on the above, the subject in the *Medical News*, September 12, 1896, concerning thyroid extract, he says, "To sum up the impression gained from the literature of thyroid feeding, it seems to be (1) of great value in simple parenchymatous goitre, especially in young people; (2) of considerable value to reduce weight in obesity, especially in the anemic, flabby types, and provided the relapse is prevented by diet and exercise; (3) it seems to deserve a further trial in obstinate cases of psoriasis, scleroderma, and lupus; also in tetany, certain phases of insanity, and retarded development in children; (4) in exophthalmic goitre it rarely does good and often harm; (5) in chlorosis, rickets, diabetes, and tuberculosis, the evidence is not sufficient to warrant interference."

Of the suprarenal extract in Addison's disease he remarks, "It is evidently a powerful medicinal agent, and severe toxic symptoms have been recorded in connection with its use, but on the whole there seems to be some reason to feel hopeful about its result. Certainly it deserves a further trial in a disease for which no other treatment has availed anything."

The author was able to collect only nine cases of the use of pituitary body in acromegalia. Five of these appear to be more or less improved. The value of the remedy is therefore not yet determined. After reviewing the literature relating to the use of bone-marrow in anemia, the author concludes: "On the whole, there seems to me less reason to expect good results from the use of bone-marrow than from any of the other animal extracts."

Treatment of Tic Douloureux.

Dana (*Boston Medical and Surgical Journal*, July 2, 1896), at the last meeting of the American Medical Association, summed up the treatment of tic douloureux as follows: (1) The hypodermic injection of massive doses of strychnine; (2) the administration of eliminants, such as iodide of potassium, and of tonics, including large doses of tincture of iron; (3) rest in bed, with light diet and diluents.

The strychnine is given in single daily doses hypodermically, beginning usually with one-thirtieth of a grain, and slowly increased until by the tenth or fifteenth or twentieth day one-sixth or one-fourth is given. A series of cases, including two women and four men, were so treated. The ages ranged from 43 to 73 years. The duration of the malady before treatment averaged six years. Relief was obtained in all but one. The duration of relief in five cases had been from one and a half to two years. The doses of strychnine in all cases reached one-fourth to one-fifth of a grain. The large doses often have a decided anodyne effect, quieting the patient for hours like a dose of morphine. Sometimes the large doses temporarily increased the pain, but this was rare. The best results were in those who felt the anodyne effects. These large doses of strychnine caused but slight increase in the muscle irritability.

Basic Orexin in the Vomiting of Pregnancy.

Rech (*Centralblatt für Gynäkologie*, August 15, 1896) reports a case illustrating the successful use of basic orexin in the vomiting of pregnancy, and thus confirms the favorable report of Frommel published in 1893. Rech gave the drug in doses of four and a half grains, in capsules, three times a day. The first and second doses were not retained, but after the third dose the vomiting ceased. With the exception of a burning sensation in the mouth, no ill effects were observed. In the case reported, nux vomica, bromides, chloroform, tincture of iodine, and cocaine had been employed with success.

The Use of Testicular Fluid Injections.

Pearce (*American Medico-Surgical Bulletin*, September 5, 1896) presents a report of the results obtained by S. Weir Mitchell from the Brown-Séquard treatment in forty cases, which included sclerotic cord diseases, paralysis agitans, and neurasthenia, especially of the sexual type. Although more than 500 injections were made, in only two instances did abscess follow. The injections were given under strict antiseptic precautions in the buttocks or thighs, usually every other day. The dose was twenty to thirty minims of the fluid diluted with distilled water.

The fluid was prepared as follows: The testicles of healthy bulls were ligated and excised immediately after killing the animal. After removing the tunics, the glands were macerated and placed in pure glycerin, where they remained for forty-eight hours. The mixture was then filtered and preserved in sealed aseptic phials. By this method one large testicle made about an ounce of solution. Of sixteen cases of ataxia in males, eleven seemed to be stimulated to at least temporary improvement by the remedy. In five cases no result was obtained. The improvement in most instances was of the nature of a general stimulation. In some ataxics improvement in muscular strength and co-ordination was noticeable. Pain was somewhat lessened in three cases. In four there was a very marked increase in sexual power. "What is most clear in any of the cases in which we have used the drug is that a general stimulation is the most frequent method of its action for good" (Dr. Mitchell). No curative power is claimed for the drug, especially in organic diseases, but it is concluded that it may prove a useful aid in locomotor ataxia by promoting a sense of comfort or "well-being," by relieving the painful crises, and by stimulating the sexual function.

Nitro-glycerin in Angina Pectoris.

Schott (*Therapeutische Monatsheft*, March, 1896) draws the following conclusions in reference to the therapeutic effect of nitro glycerin in angina pectoris:

(1) It acts best in the pure angiospastic forms of angina pectoris, not so well in the pain of aortic disease, and still less favorably in that due to myocarditis or fatty heart. It is of little value in the pains of aneurism, and is generally useless in the pure motor neuroses of the heart.

(2) Its action in different subjects can never be predicted. If toxic symptoms appear after the exhibition of a small dose, it is best to discontinue the drug.

(3) If no toxic symptoms appear, gradually increasing doses can be given with safety.

(4) According to the experience of the writer it is best given in liquid form, combined with tincture of capsicum, rectified spirit, and peppermint water.

(5) It acts with remarkable rapidity, the height of its physiological effect being reached in two or three minutes.

(6) When several small doses are without effect, larger doses should be given. Sometimes a single large dose acts best.

(7) More than one-sixty-fifth of a grain can be given in a single dose.

Regarding Benign Changes in the Uterine Mucous Membrane.

Pinkuss (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxxiii, Heft 2), from a very exact study of 115 cases, separates the benign changes of the uterine mucous membrane into glandular (twenty-four cases) and interstitial hyperplasia (ninety-one cases). These two changes, however, may be combined in the same mucous membrane. The pure glandular hyperplasia is never caused by inflammation, but through indirect irritation, due to circulatory disturbance. Such irritation is associated with nervo-hysteria, arises from masturbation, impotence, or is oöphorogenic in origin. Interstitial endometritis is always due to previous infection. Glandular hyperplasia of the endometrium is found in cases of true dysmenorrhea, particularly where there is a mucous discharge or the periods are long delayed and the menstrual hemorrhage slight.

Interstitial endometritis causes purulent leucorrhea which may be associated with hemorrhage.

Atrophy of the endometrium is associated with atypical, profuse hemorrhage without leucorrhea.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

Obstetric Lesions of the Eye.

De Wecker (*Annales d'Oculist*, July, 1896) reports three cases of partial or complete opacity of the cornea in the new-born, resulting from the application of forceps during labor. He was called to see one of the cases when the child was ten days old. The cornea was then so opaque that even with oblique illumination no trace of a pupil was to be seen. The mark of the blade of the forceps across the middle of the eyebrow and extending towards the parietal region indicated the cause of the trouble.

De Wecker made, in a month's time, six subconjunctival injections of five drops of a 1 : 1000 sublimate solution, with the result that the opacity was in that time almost completely dissipated, though he thinks that without any treatment such opacity will gradually clear up. He also alludes to cases of paralysis of the external recti and of ptosis similarly produced.

Gangrene of the Leg in Puerperal Women.

T. Oliver (*Lancet*, July 4, 1896) reports two cases of gangrene of the leg occurring in puerperal women. In the first case right brachioplegia with transitory, difficulty of speech occurred fourteen days after a normal confinement, and was succeeded by popliteal thrombosis and consequent gangrene of the foot and leg. Amputation above the knee was followed by recovery. In the second case pneumonia appeared four days after confinement, and a few days later endocarditis was discovered, followed by embolism of the right popliteal artery. The leg was amputated above the knee, and death occurred nineteen days later from pneumonia and exhaustion.

Lactation and Atrophy of the Uterus.

Vineberg (*American Journal of Obstetrics*, July, 1896) states that a true process of atrophy goes on quite independently of even relative debility or anemia. In women who remain feeble after labor or become weak from any cause, external or internal, and in patients who are anemic before pregnancy, the uterus tends to remain large. Subinvolution is and has long been recognized a morbid condition. Vineberg finds that when involution goes on to its full completion the uterus is reduced to a size smaller than that of the non-parous organ. Post-puerperal superinvolution is principally seen in nursing women, and from this circumstance has

been termed "lactation atrophy." It is normal and desirable and is temporary, becoming permanent under rare and unfavorable circumstances. When the lying-in woman cannot suckle, the medical attendant should try to bring about superinvolution. Vineberg believes that this course will save her from the development of a host of maladies due to subinvolution.

Glycerin in the Induction of Labor.

Kossmann (*Therapeutische Monatschrift*, June, 1896) considers that the accidents which have occurred in the induction of labor by the injection of glycerin were caused by the drug being used in large doses for hygroscopic purposes, and not with the more physiological object of, as in the rectum, stimulating the unstriped muscle. He has used glycerin injections in two cases with marked success.

The first case was that of a III-para, who had in her previous labors gone four weeks over time and given birth to a dead child. At the time she came under Kossmann's observation the gestation had lasted forty weeks. The abdomen was very large, and the patient wished for a living child. Five cubic centimetres of glycerin were injected with antiseptic precautions into the cervical canal, and a colpeurynter was introduced into the vagina. In a few minutes powerful pains began, the os dilated, and combined version became possible. A healthy female child was delivered in one and a half hours from the injection. The woman made an uninterrupted recovery.

The second case was that of a multipara, who suffered from enormous varicose veins of the legs, vulva, and vagina, which had so obstructed the last labor that the child was born asphyxiated. Kossmann decided to induce labor on this occasion at the thirty-fifth week. He injected five cubic centimetres of glycerin into the os and placed a strip of iodoform gauze soaked in glycerin in the cervical canal and a colpeurynter in the vagina. Five minutes later the pains came on, version was performed, and the child delivered with ease. The woman passed through a normal puerperium, and the veins rapidly were reduced in size. He concludes that the injection of this quantity of glycerin into the cervical canal will bring on strong pains without leading to nephritis or any other effect. The method is much more rapid and certain than puncture of the membranes, vaginal douches, etc. It is free from the danger of infection which attends the injection into the uterine cavity. The introduction of a colpeurynter into the vagina serves to keep up the pains when they have been started, and therefore makes further injection of glycerin unnecessary. Kossmann recommends the use of this method as being, next to simple vaginal douches, the most harmless method of inducing labor.

Prevention and Treatment of Insanity of Pregnancy and the Puerperal Period.

Dr. Geo. H. Savage (*British Gynecological Journal*, 1896, xliv, p. 559) classifies the insanity of pregnancy into—

(*a*) Mental disorders occurring in the early or latter months of pregnancy.
(*b*) Insanity of labor.
(*c*) Associated with febrile disorder at the establishment of milk secretion.
(*d*) Occurring within the first two weeks subsequent to labor.
(*e*) Between two and six weeks subsequent to labor.
(*f*) Insanity of lactation and that of weaning.

Savage does not believe that there is a special, definite form of insanity deserving the name of "puerperal mania." The predisposing causes are similar for

all the forms of the disorder, heredity being the most important factor. First pregnancies, especially if after the age of 30, are considered more dangerous than earlier pregnancies. Illegitimacy has a doubtful influence.

The induction of premature labor as a cure for insanity Savage believes to be far from justifiable in every instance. Within the first two weeks after delivery maniacal symptoms are most common with puerperal insanity, whereas, if developed later, melancholia is more frequent. Savage questions the advisability of the marriage of neurotics, especially if of a pronounced hysterical tendency, because of the danger involved in childbearing by such persons. The term puerperal insanity may be ascribed more justly to a group having sepsis as the etiological factor. The questions involved as to the treatment have reference to the etiology, the use of hypnotic drugs, the removal from home to more favorable surroundings, or the placing of the patient in an asylum.

The Question of Puerperal Self-Infection.

Jewett (*American Gynecological and Obstetrical Journal*, 1896, No. 4, p. 417) refers in particular to the relation of pus-producing germs primarily present in the body of the pregnant woman to childbed sepsis, and draws the following conclusions:

(1) There is no clinical proof that puerperal infection can occur from normal vaginal secretions.

(2) All childbed infection in women previously healthy is by contact.

(3) Prophylactic vaginal disinfection as a routine measure is unnecessary, and even in skilled hands is probably injurious.

(4) Its general adoption in private practice could scarcely fail to be mischievous.

(5) In healthy puerperæ, delivered aseptically, post-partum douching is also contraindicated.

(6) A purulent vaginal secretion exposes the woman to puerperal infection.

(7) In the presence of such discharges at the beginning of labor the vagina should be rendered as nearly sterile as possible.

(8) Concentrated antiseptic solutions should not be used, and the process should be conducted with the least possible mechanical injury to the mucous surfaces.

(9) In case of highly infectious secretions, the preliminary disinfection should be followed by douching at intervals of two or three hours during the labor.

(10) The safest and most efficient means for correcting vicious secretions is a mild antiseptic douche, repeated once or more daily for several days during the last weeks of pregnancy.

(11) Clinically, the amount of discharge, its gross appearance, and that of the mucous and adjacent cutaneous surfaces usually furnish a sufficient guide to its treatment.

(12) Probably unclean contact within twenty-four or forty-eight hours is an indication for prophylactic disinfection.

Labor after Symphyseotomy.

Th. B. Hansen (*Hospitals Tidende*, p. 597, 1896) attended a woman in confinement who had been delivered by symphyseotomy three years previously. She gave birth to a well-developed child, weighing six and a half pounds, without difficulty. The child, however, died in parturition on account of prolapse of the cord.

Immediately after the birth of the child the two branches of the symphysis were found to be separated about four centimetres. A strong bandage was applied to the pelvis, and in five weeks the woman was able to walk a mile without difficulty. The distance between the two portions of the symphysis was then found to be one centimetre.

Dystocia due to Retention of Urine by the Fetus.

O. Saintu (*Journal de Médecine de Paris*, July 12, 1896) reports the case of a woman upon whom it was decided to induce labor at about the eighth month on account of a contracted pelvis. Saintu delivered the head, shoulders, and thorax with ease, but the rest of the labor was conducted with great difficulty on account of immense distention of the fetal abdomen. The child did not urinate until the next night, when it passed a large quantity of urine, and catheterization removed more. The child died the next evening. At the autopsy the bladder was found to extend to the ensiform cartilage above, and laterally to the sides of the abdomen. The urethra was perfectly patent.

Labor Complicated by Cicatricial Stenosis of the Os Uteri.

Clivio (*Annali di Ostetricia e Ginecologia*, March, 1896) has reported a case of labor complicated by cicatrices, which had formed over the mouth of the uterus as the result of a previous operation for carcinoma. The dilatation was accomplished by means of incisions and the use of the Tarnier dilator. The fetus was extracted after craniotomy. The puerperium was normal. Clivio discusses operations for the relief of carcinoma, and cites the opinions and experiences of twenty or more different authorities reaching the conclusion that, in cases of carcinoma of the vaginal portion of the cervix in women who have not reached the menopause, hysterectomy is to be preferred to high amputation of the cervix. Where pregnancy complicates carcinoma of the cervix, radical treatment, even if it does endanger the life of the fetus, is to be preferred to a partial operation or to expectant treatment based on the hope of saving the child.

GYNECOLOGY.

UNDER THE CHARGE OF

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ASSISTED BY

H. D. BEYEA, M.D.

Regarding Carbolic Acid Gangrene.

Leusser (*Münchener medicinische Wochenschrift*, No. 15, 1896) has observed three cases (two of which were amputations) where applications of carbolic acid resulted in gangrene. He also has been able to collect fifty similar cases from the literature. He says that a two-per-cent. solution of carbolic acid can have a dele-

terious influence, and concludes that the observations and experimentation of Frankenburger must be correct. Frankenburger has proven by experimental studies that carbolic acid is directly harmful to blood corpuscles, and therefore causes blood-stasis, etc.

The Etiology of Cystitis.

Kastalskaya (*Centralblatt für Gynäkologie*, No. 33, 1896), from a bacteriological study of secretions from the bladder in twelve cases of cystitis, reports the following results: (1) In one case he found the bacillus fetidus liquefaciens mixed with tubercle bacilli and non-pathogenic cocci; (2) in five cases tubercle bacilli, twice as a pure culture, once mixed with non-pathogenic cooci and bacterium coli immobile, and once with non-pathogenic cocci and the bacillus fetidus liquefaciens; (3) in four cases the bacterium coli immobile, twice as a pure culture, once with non-pathogenic cocci and tubercle bacilli, and once with streptococcxs pyogenes; (4) in one case pseudo-bacterium coli commune as a pure culture; (5) in one case bacilli with non-pathogenic cocci; (6) in one case streptococcus pyogenes with bacterium coli immobile; and (7) in one case a pure culture of pseudo-staphylococcus albus.

The Effect of Laparotomy on Tubercular Peritonitis.

Gatti (*Il Policlinico*, March 28, 1896), from experiments on dogs, guinea-pigs, and rabbits, attempted to determine the value of laparotomy in the treatment of tubercular peritonitis. He concludes that laparotomy has little effect when the tuberculosis is quite initial. Tuberculosis presents no macroscopic changes during the first three or five days after operation, but a small quantity of reddish serum is thrown out. From seven days to nearly a month the tubercle was almost always increased in amount; but after this diminution and disappearance was noticed. Cure, he says, occurs through a degeneration of the epithelial cells, without the intervention of wandering cells, independently of phagocytosis and without the formation of fresh connective tissue. Gatti thinks the serous fluid which is thrown out the first few days stimulates the repressive processes after laparotomy. This is effected by the serous fluid, bathing the tuberculous mass, and having a bactericidal and attenuating action on the tubercle bacillus.

A Proof of the Presence of Gonococci in Tissue and Blood-Vessels.

Wertheim (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxxv, Heft 1), at a meeting of the Berlin Obstetrical and Gynecological Society, demonstrated a preparation from a case of gonorrheal cystitis which showed the capillary and precapillary veins filled with gonococci, a condition of gonorrheal thrombosis and thrombo-phlebitis The cystitis was secondary to a gonorrheal vulvo-vaginitis and associated with infection of both ulnar joints.

The microscopic sections presented were made from a portion of mucous membrane excised during cystoscopic examination. A small portion of this excised mucous membrane was also placed in prepared blood-serum, with the result that a pure culture of gonococci was gained. Wertheim says, regardless of the statements of Guyon and his school, Bumm, Sanger, and others (that a gonorrheal infection of the bladder is always a mixed infection), the finding of gonococci alone in tissue and blood-vessels in this case proves beyond doubt that pure gonorrheal cystitis, a gonorrheal thrombosis, and thrombo-phlebitis has never before been

demonstrated, and the writer believes this a step in advance towards a better knowledge of this disease. He says it is useless to seek for gonococci except in the very acute stage, that they very soon disappear. This patient was well after four weeks' treatment.

An Electrode for Liberating Ligatures.

Cleveland (*American Journal of Obstetrics*, August, 1896), at the twenty-first annual meeting of the American Gynecological Society, May 28, 1896, exhibited an electrode which he attaches to the silk ligature in vaginal hysterectomy. It occurred to him some time ago to use this electrode to burn the ligatures. The electrode consists of two copper wires, carefully insulated by silk thread, except near the points where there is a connecting loop of platinum. These are attached to the electrodes, thus severing the silk ligatures. He has used the instrument with much satisfaction in a number of cases, applying as many as eight of these electrodes and removing them as described. The electrodes were flexible and did not interfere at all with the usual manipulations.

Drainage of the Stump in Abdominal Hysterectomy.

Byford (*American Journal of Obstetrics*, August, 1896) at the last meeting of the American Gynecological Society read a paper on this subject. He said that in forty-six cases he had turned the uterine stump into the vagina through an opening made into the anterior vaginal fornix. In eighteen cases he had sutured the stump with chromicized catgut, shutting off the peritoneal cavity and draining through an opening made into the anterior vaginal fornix; in one case he had not shut off the peritoneal cavity, but had drained the *cul-de-sac* of Douglas; and in three cases he removed the whole uterus and drained the stump through an opening left in the upper part of the vagina. Out of this total of sixty-eight, three had died. It is his opinion that if he had not drained, there would have been at least twice as many deaths. His present method consists in sewing up the stump with catgut and draining through an opening made in the anterior vaginal wall just in front of the cervix. In a large proportion of vaginal hysterectomies some fluid would accumulate, and he had known of deaths occurring in the hands of others from lack of drainage.

A Case of Profuse Hemorrhage caused by a Syphilitic Growth of the Vaginal Cervix.

Wolter (*Münchener medicinische Wochenschrift*, No. 20, 1896). The patient's husband had been infected with syphilis fifteen years before. The patient had been treated with mercurial inunction for two years. She had had nine children born dead, the last dying during labor and showed few signs of syphilis. One-half year after the birth of this last child she began to have profuse and prolonged menstruation. The hemorrhage finally became so severe that it caused collapse, and had to be controlled by iodoform vaginal tampons. On the right half of the surface of the cervix there was found a growth which extended into the uterine cavity and bled easily when touched. The patient was given potassium iodide, and after three weeks the growth had disappeared and the hemorrhage ceased.

PATHOLOGY.

UNDER THE CHARGE OF

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ASSISTED BY

DAVID RIESMAN.

Noma.

Nicolaysen (*Norsk Magazin for Lägevidenskaben*, p. 137, 1896, and *Universal Medical Journal*) made a bacteriological examination in two cases of this disease. In the first case he found bacilli and cocci, the former being very numerous in the necrosed portions and penetrating but little into the neighboring parts, while the cocci had penetrated deeply into the lymphatics of the surrounding healthy parts. Cultures yielded a liquefying staphylococcus and but a single bacillus, staining by Gram's method and resembling the bacillus of diphtheria. Neither of these organisms proved pathogenic to guinea-pigs. In the second case the author found a bacillus exactly resembling that in the first case. According to him, this bacillus differs markedly from the bacillus of noma as described by Schimmelbusch.

Vitality of the Diphtheritic Bacillus out of the Body.

Flügge (*Lancet*, May 16, 1896), in his "Grundriss der Hygiene," published in 1889, stated that the microbes of diphtheria retained their virulence for ten days in the form of dust, and for from four to six weeks if dried in dense layers; but in a paper on the means by which the disease is spread, which appeared in the *Archiv für Hygiene*, Band xvii, in 1894, he expresses his incredulity as to aerial diffusion of diphtheria beyond the range of personal intercourse, on the ground that the degree of desiccation required for the floating and conveyance of the bacilli in currents of air would be fatal to them.

Roux and Yersin and Perince and Scagliosi had carried out some experiments with portions of the membrane, but Carlo Reyes, deeming these unsatisfactory, since it was not by such means, but rather by the saliva, mucous discharges, and similar fluids that the infection took place, undertook an inquiry into the subject, using pieces of linen or cotton, silk, paper, sand and finely pulverized and sifted earth, which he saturated with emulsions in water of pure cultures of great virulence. These materials were allowed to dry spontaneously, and were then exposed to light or were kept in darkness in air of the normal humidity at ordinary temperatures, or maintained in a state of saturation; and in atmospheres artificially dried by H_2SO_4, or kept at constant temperature of 37° C. His results, which appear in the *Anali d'Igiene Sperimentale*, Vol. v, 1895, show that in chemically and absolutely dried air Löffler's bacilli died in all cases within a few hours, forty-eight at the most; that light had, as a rule, but little influence; that under other conditions they retained their vitality on silk and paper for a few days only in dry, and for about a week in moist, air; on cotton or linen for from five to eighteen days, longer when moist than when dry; in sand exposed to light and with a dry atmosphere for five days only, but, in darkness, for sixteen or eighteen days, and as long again with a moist atmosphere; while in fine earth they retained their vitality for from 75 to 105 days in dry air, and were still active in damp air after 120 days. He also

exposed vessels of water at different heights above the floor to dry dust containing living microbes raised by draughts produced by mechanical means, with the result that cultures were successfully obtained from most, thus demonstrating not only the possibility of aerial diffusion of the virus for various periods, but its persistence in moist earth for an almost indefinite time. Though, as a rule, he observed a progressive attenuation of the virus, the fact that in moist earth, which had previously been desiccated so as to permit of its reduction to an impalpable powder, the microbes were still living after the lapse of 120 days, suggests the possibility of their permanent existence and reproduction in soil charged with pabulum in the form of decomposing organic matter,—in other words, that diphtheria may be one of those filth diseases in the life-history of whose microbes their parasiticism is an accidental stage.

Shell-Fish and Typhoid Fever.

The opinions of the medical officer of health (*Lancet*, August 1, 1896) of Brighton on the subject of shell-fish and typhoid fever have been frequently expressed in the course of recent inquiry. In his annual report on the health of the borough, Dr. Newsholme reports fifty-six cases of this disease, and says about one-third was attributable to the eating of raw shell-fish. The evidence connecting these nineteen cases with the consumption of raw sewage-contaminated shell-fish did not consist simply in the fact that shell-fish had been consumed within three weeks before the date of the onset of the disease. The facts when investigated in detail were much more conclusive, comprising as they did the significant circumstances that in the majority of cases either (*a*) the person taking the shell-fish was the one person acquiring typhoid fever, or (*b*) when other persons in the same house had eaten shell-fish they had diarrhea or other evidence of illness, although this did not develop into actual typhoid fever. When it is added that sewage-derived organisms were found in the interior of oysters derived from the same bed or ponds, the evidence in this particular case becomes as strong as it can in the nature of things be in a medical inquiry concerned with circumstances of life necessarily complex in character.

Elimination of Micro-organisms by Glands.

Biedl and Kraus (*Centralblatt für innere Medicin*, July 18, 1896). By a series of experiments upon dogs, the authors found that bacteria injected into the veins are eliminated by the kidneys and liver, but not by the submaxillary salivary gland. In one instance the bile which, before the injection, was sterile in thirteen minutes, contained the injected staphylococci. The saliva remained sterile.

The experiments, besides establishing the fact that normal blood vessels may be traversed by micro-organisms, also show the character of the liver as an eliminator of germs from the blood.

Fever.

In the discussion on fever in the Fourteenth Congress for Internal Medicine (*Centralblatt für innere Medicin*, April 25, 1896, and *British Medical Journal*), Unverricht mentioned that there were two theories of fever: (1) that of Liebermeister, who would look upon the raised temperature as producing the other symptoms of fever, and (2) the view that fever is a complex of symptoms in which temperature plays an important part, but does not cause the other symptoms. Unverricht believes that the symptoms of fever do not depend on the temperature, but on

the nature of the cause of the fever, and especially upon the toxic products circulating in the blood in infective processes. There is, in all probability, no single poison common to all the infective processes, such as the escape of fibrin ferment in the blood. Other symptoms of fever may be present, without rise of temperature. Von Jaksch pointed out that besides the rise of temperature metabolic changes were an important manifestation of fever. Large doses of alcohol were to be avoided. Antipyretic drugs were valuable not because they were antipyretics, but because they were nerve tonics, and they could not be done without. Schill had never used antipyretics. Unverricht has always taught that the damage hitherto attributed to raised temperature has not been proved, and that the view that the raised temperature is useful is in all probability correct. Experiments on animals show that febrile temperature exercises an inhibitory action on the development of bacteria. Perhaps certain toxins form at higher temperatures new and harmless combinations. Clinically the pneumonia of the aged is less unfavorable if the temperature is high.

Tetanus and its Toxin.

Blumenthal (*Zeitschrift für klinische medicin*, xxx, Nos. 5, 6, 1896) reports two cases of tetanus and draws the following conclusions in reference to the nature of tetanus toxin:

(1) The tetanus toxin is a substance, non-albuminous in character, soluble in water, containing sodium chloride.

(2) The tetanus toxin is rendered innocuous by the injection of curative serum.

(3) The toxin is contained in the spinal cord, and in this locality it is not rendered innocuous by the antitoxin.

(4) The toxin found in human beings with tetanus does not cause a rise of temperature in guinea-pigs, as in men, but lowers the body temperature.

(5) The urine of tetanus subjects contains no active toxin, but the urine of animals not affected with tetanus may cause tonic spasms in guinea-pigs and mice.

BOOK NOTICES.

The Practice of Medicine. A Text-Book for Practitioners and Students with Special Reference to Diagnosis and Treatment. By James Tyson, M.D., Professor of Clinical Medicine in the University of Pennsylvania, and Physician to the Hospital of the University; Physician to the Philadelphia Hospital; Fellow of the College of Physicians of Philadelphia; Member of the Association of American Physicians, etc. Philadelphia: P. Blakiston, Son & Co., 1896.

Within the century the University of Pennsylvania has furnished more text-books to the medical profession than the combined faculties of any other half dozen institutions of the country. The pres-

ent incumbents of chairs are, if possible, bettering the example of their predecessors. There is not, we believe, a text-book from each department, but the works of Stillé, Agnew, Ashhurst, Wood, Wormley, Piersol, Norris and Oliver, Duhring, Meigs and Pepper, and Musser, and the Systems or Text Books, edited by Pepper, Hirst, and J. William White make a very pretty showing. And here is another!—this time on the broad subject of Medicine, which has had no text-book from the chairs of medicine since George B. Wood. Stillé wrote many books. The younger Pepper has edited a System and a Text-Book, but it has remained for the present occupant of the chair of Clinical Medicine to launch an independent work upon the stream,—to sink or float according to its merits.

Nowadays, to write a text-book of medicine is a most audacious undertaking, indicating either the callowness of the young man still in the know-all stage, or the hardened old teacher whose perennial dogmatism of the class-room runs smoothly into linotype. We should be sorry to think of Dr. Tyson as hardened, or of his teaching as too dogmatic, but at any rate he can be numbered among those who have written out of the fulness of their experience. Few teachers in the country can claim a longer apprenticeship in the laboratory and at the bedside, none a more intimate acquaintance with students, since in one capacity or another he has been associated with the University of Pennsylvania and the Philadelphia Hospital for nearly thirty years. Moreover, he entered medicine through the portal of pathology, a decided advantage in the writer of a text-book, if not in a teacher of practical medicine. As a successful author in less ambitious fields, he may be supposed to know something of the art of book-making; though the crack man for the hundred yard dash may not be worth training for the two-mile race. To cover successfully the entire subject of medicine in a single volume demands both brawn and brain. A good text-book should be well proportioned, clearly arranged, clearly written; it should be an up to-date exposition, and to students and practitioners it should be a safe guide amid the weary wastes of practice. How far does the work before us fulfil these requirements?

Divided into fifteen sections it seems well proportioned and well arranged, having in these matters no very striking peculiarities to distinguish it from other books of the kind. Section XV contains a very useful summary of symptoms following over-doses of poisons and the treatment of their effects; and there is an appendix containing tables for the conversion of the English into the metric system, both of which are used in the prescriptions and dosage. There are no special introductory sections dealing with the physical examination, except in the case of diseases of the stomach, and in the nervous system there is a very full statement of the methods of investigation of a case of nervous disease.

As a rule, medical anatomy is not specially considered, except in connection with the nervous system. It is difficult to see why the author should have taken up a page and a half with the discussion of the topography of the mediastinum, which any third-year student ought to know fairly well.

The due proportion between the different articles is well maintained throughout. Typhoid fever occupies forty-six pages; diphtheria nearly thirteen; appendicitis nearly sixteen; pneumonia sixteen. Occasionally one notices a little lack of proportion; thus, a comparatively rare disorder as cretinism occupies fully a half page more than such a common affection as tuberculosis of the peritoneum. Still, on the whole, the balance is exceedingly well held between the various sections. There is even no undue stress laid upon the renal disorders, in which the author has been for so many years recognized as an authority.

In the arrangement of the sections the infections are first considered, and then the diseases of the different organs. One can scarcely see why (except for the matter of typographical convenience) the constitutional diseases should be sandwiched between diseases of the suprarenal capsules and those of the nervous system. Like the authors of other recent text-books, while acknowledging its infectious nature, Dr. Tyson considers pneumonia under the diseases of the respiratory system,—perhaps with wisdom; but it is high time that our book-makers placed rheumatic fever where it properly belongs. In considering the animal parasites, though there is a special section, yet several of the more important parasitic diseases are considered under the various organs, as echinococcus in diseases of the liver. Altogether, with but trifling exceptions, the arrangement of the sections leaves nothing to be desired.

Clearness of description, the third qualification of a good text-book, is a notable characteristic. Many of the definitions are peculiarly lucid. Take, for example, this: "Migraine is an intermittent, sensory neurosis, of which headache, commonly hemicranial, is the most invariable symptom. Almost as constant are aggravated nausea and vomiting, to which may be added other sensory symptoms, especially deranged vision." Redundancy is, as a rule, avoided. Such sentences as the following are common: "Bereft of its capsule, the kidney is hard, granular, tough, and usually darker than in health, whence the name 'red granular kidney.'" Of course, in a text-book one meets with infelicities, as "the patient is really very ill usually" (p. 67); but, on the whole, the style is excellent, and devoid of glaring errors such as too often disfigure medical writings.

How far the work is an up-to-date production will be best illustrated by a brief reference to one or two of the important sections.

The article on typhoid fever should be the *pièce de résistance* of a work on medicine, from which, more than from any other, the stand-point of an author may be judged. For the scope of the book, the historical introduction is very complete, giving full credit to the labors of American physicians. The bacillus of Eberth is recognized as the specific cause, and the wide-awakeness of the author is shown by a careful description of Elsner's important method (only published this year) of differentiating the typhoid and colon bacilli. The relation of oysters to the disease, about which so much has been written lately, deserved more than a passing reference. We doubt the statement that the pregnancy protects against typhoid fever; at least we know of no figures which justify it, and the author gives none.

The anatomy and symptomatology are fully and accurately given; no essential details have been overlooked. In the section on treatment the author shows himself a warm disciple of Brand, as he well may be, with a mortality (at the Philadelphia and University Hospitals) of 7.3 per cent. We are glad to notice an account and wood-cut of Burr's portable bath-tub, which is of special service in private practice. The advocates of the antiseptic and eliminative methods will be furious at our author's shocking neglect of their claims. In a section on treatment, extending to ten pages, the subject is dismissed with the brief statement: "The antiseptic treatment has not a truly rational basis, while the extravagant claims of its advocates discredit their results." No sentence in the work places Dr. Tyson in better light as a man who has written from the stand-point of an honest student of disease. It would have been so easy to yield to the present clamor, and to put in the favorite antiseptic prescriptions exploited by the large drug-houses on a pliable profession. It is a hopeful sign when our leaders show independent spirit, and have the courage of their opinions. The general directions upon diet and upon the management of convalescence are given from the basis of a wide and varied experience. One is a little startled at the suggestion of a "soothing touch and voice" to control the delirium. Either there is magic in the touch of Philadelphia nurses (of whom we regret that we have no personal knowledge), or the delirium of Dr. Tyson's patients must be in keeping with the well-known, peaceful character of the mental operations of the inhabitants of the Quaker City.

The article on appendicitis, which extends to sixteen pages, is in every respect a model one. The evolution of our knowledge to date is admirably sketched in an historical introduction. Catarrhal, ulcerative, and interstitial forms are recognized, and under the latter the gangrenous is placed. The obliterative appendicitis, described by Senn and others, is not recognized as a special variety, but the condition is described under the catarrhal form. The symptomatology of the affection is given with unusual fulness and care. Very proper emphasis is laid on one or two points rarely referred to, and not, we believe, mentioned in any other text-book,—namely, that while the fever is always present at the onset, suppuration may exist unattended with fever, and that there may be gangrenous appendicitis in the presence of a normal temperature. In the differential diagnosis, the possibility of mistaking typhoid fever for appendicitis, and *vice versa*, is discussed. There have been, we understand, several cases in which the abdomen has been opened in the former disease under the belief that appendicitis was present. Perforation of the appendix in typhoid fever, though referred to, is scarcely dwelt upon with sufficient emphasis. The author does not attribute much importance to the so-called appendicular colic. In the matter of treatment Dr. Tyson adopts a more advanced surgical stand than is usual with medical teachers, holding that "in the vast majority of cases operative treatment is sooner or later demanded," and that "the diagnosis being established, operative treatment should be recommended, except in those cases where the disease is not so far advanced as to make it unlikely that the patient will be saved by operation." This will be

regarded by conservative men as an altogether too radical position. He holds that excision of the appendix *after* a first attack is a safer procedure than *during* the first or any attack. In discussing the medical treatment he urges that opium should be withheld if possible, and on the question of aperients he does not take a decided stand, stating, however, that in cases of moderate severity they may be useful.

But to appreciate the very thorough and satisfactory character of this article one has to compare it with those in the text-books at present used in the schools. That in Osler alone has the same scope and extent. In the "American Text-Book of Medicine" the article is far too scant, and the same may be said of the "American Text-Book of Surgery." In the last edition of Flint (1894), and in the last edition of Loomis (1895), the imperfect manner in which this really vital question is treated illustrates the folly of attempting to put new wine into old bottles. Strümpel, Lyman, and Whittaker are in the old time thralls of typhlitis and perityphlitis, though Whittaker does justice to the work of his American colleagues. The article in Lyman's "Practice" (1892) (which might have been written by a German) illustrates in a small way how very far west Chicago is situated.

In the section upon diseases of the kidneys very little space is devoted to morbid states of the urine or to methods of examination, and this is as it should be, since almost every student buys a "Diagnosis," and a "Manual" on the examination of the urine. The general remarks upon albuminuria occupy only four pages. The important subject of functional albuminuria is discussed in a paragraph, which, though brief, contains material which another might have expanded into a chapter. The following is the chief part of it. "In the first place it (the albumin) should be small, not exceeding one-tenth the bulk of urine tested, and though it is not necessary that it should be absent on rising, yet it is a strong point in favor of the functional nature if it is absent at this time and present only after some exertion has been made or on taking food. No tube-casts should be in the urine, the urea should be in sufficient quantity, there should be no retinal change, no hypertrophy of the left ventricle, no high tension to the pulse, not even a suggestion of dropsy. And this condition should be maintained over a considerable length of time before the conclusion is arrived at that we have to do with a harmless functional albuminuria." Peptone, albumose, mucin, and globulin are deemed of too little significance to be treated of at any length in a text-book. We are glad to see that Dr. Tyson adopts the old-fashioned but satisfactory classification of Bright's disease into acute and chronic parenchymatous nephritis and interstitial nephritis. There is an excellent section on lardaceous disease. In discussing tuberculosis of the kidney one misses a statement of the great liability to confound the smegma with the tubercle bacillus. A section of very special value is on the relations of heart- and kidney-disease, an association which the author classifies and discusses very fully under four sections.

The practitioner will find a most valuable section upon diseases of the bladder, considered from a medical stand-point.

This hasty sketch of one or two of the important sections will give our readers a slight idea of the scope of the book. Did space permit, there are other parts upon which we would like to dwell, particularly the diseases of the nervous system, which are very thoroughly considered. We must call attention, however, to the section upon "the cortical areas covering the speech," and the various forms of aphasia. We do not know of any modern text-book in which the subject is presented with the same clearness.

And lastly, as a fifth qualification of a good text-book of medicine, students and practitioners should find in it a trusted counsellor on the all-important question of treatment. Dr. Tyson's position on most questions may be characterized as eminently judicious. We have seen that he is a warm advocate of the Brand method of treatment in typhoid fever. So, too, he recommends fully and gives very specific instructions for carrying out the serum therapy in diphtheria. A little greater fulness, perhaps, might have been expected on the question of the tetanus antitoxin, but in the different diseases in which serum therapy has been introduced the procedures are discussed with accuracy. As a rule, the paragraphs on treatment are everywhere full and sound. The author is singularly free from fads, and speaks as one having the authority of long experience in the practical management of cases.

That there are errors—sins of commission and sins of omission —*il va sans dire.* Wherever did the author get the name of Surgeon-Major Porter as the describer of the tracheal tugging? Gould, we see, gives it to Porter, too. Osler gives it to Oliver, and on looking up the point we find that he is right. Something should have been said under tetany, of its relation to disease of the thyroid gland, and the possible good effects of the extract of the gland. Retarded coagulability of the blood in purpura and allied affections, and the curative influence of calcium chloride are not referred to. No note is made of the characteristic form of the expectoration in abscess of the liver perforating the lung. Rotch's sign in pericardial effusion, upon the value of which Ebstein and other German authors have laid stress, is not mentioned. We can find no notice of alcaptonuria, a condition very liable (as in the case first described in this country by Marshall) to be confounded with saccharine diabetes.

The typographical errors which we have noticed are neither numerous nor serious. On page 343, the name of the author's colleague, Dr. Musser, is mutilated. The name of Professor Welch, of the Johns Hopkins University, is in several places misspelt. In the section on pancreatic disease, Dr. W. W. Johnston receives credit for work which was done by his brother. The Heberden referred to under arthritis deformans should have been specified. We do not at the moment know which Heberden is meant, but *the* Heberden died in 1801, and could not have described the disease in 1804. From page 919 to page 923 the running heading is wrong, and in the section on parasites there are a number of minor errors.

The typography is decidedly above works of this class issued from our publishing houses. There is no American Practice of the same attractive appearance. The print is unusually sharp and clear,

and the quality of the paper particularly good. The free use of italics and dark-faced type emphasizes for the student paragraphs and important points.

In the preface to Dorsey's "Surgery," in its day one of the best text-books issued from the University of Pennsylvania, there is a quotation from John Bell, as follows: "A book once published is like a life come to its final consummation, irrevocable,—needing no apologies if good, admitting none if it be not so." Dr. Tyson's book needs no apology, and he is right in offering none for its appearance. It is a piece of good honest work, carefully conceived, and conscientiously carried out. Students and practitioners will soon find out its merits, and we predict for it a career of marked success.

THE TOXIC AMBLYOPIAS: THEIR CLASSIFICATION, HISTORY, SYMPTOMS, PATHOLOGY, AND TREATMENT. Being an essay to which was awarded the Alvarenza Prize of the College of Physicians of Philadelphia, October, 1894. By G. E. DE SCHWEINITZ, A.M., M.D., Professor of Ophthalmology in the Philadelphia Polyclinic; Clinical Professor of Ophthalmology in the Jefferson Medical College, etc. Philadelphia: Lea Brothers & Co., 1896.

The author, believing that "there are still many facts to be learned in regard to the etiology and pathology of a number of drug-amblyopias," and that "they furnish an inviting field for study and research," has deemed, therefore, that "a collection of our information with reference to them is desirable." In consequence, he has written the present essay.

The paragraphs devoted to the history, etiology, symptoms, diagnosis, prognosis, pathology, and treatment, have all been obtained from a study of the literature upon the subject. To this, the major portion of the volume, he has added a considerable amount of experimental work. This has been done chiefly with reference to alcohol-amblyopia, quinine-, cinchonine-, and salicylic-acid amaurosis, and the so-called filix-mas amblyopia.

As the preface states, "some space has been devoted to abstracts of amblyopias due to alcohol, nitrobenzol, iodoform, and filix-mas, because they bear somewhat the general description which the details of physiological experiments do to the conclusions which are reached."

These excerpts, borrowed from the preface, which faithfully represent the contents of the book, are here given as the best exposition of the contained subject-matter.

The reviewer, who has had opportunity given to him to make extensive research into the literature of this type of cases and has had a broad clinical experience in this class of work, unhesitatingly recommends the book as the best that has ever been offered upon the subject in the English language.

Dont's for Consumptives, or the Scientific Management of Pulmonary Tuberculosis. By Charles Wilcox Ingraham, M.D. Binghamton: The *Call*, 1896.

When, as inculcated in this volume, there shall have been established in each consumptive's home a "modern sanitarium," and when the volume, which is dedicated "to the advancement of self-study among pulmonary invalids, and the promotion of public information upon the subject of tuberculosis," shall have been read and reread until the poor unfortunate patient "is thoroughly familiar with the entire subject," the millennium will have been reached. But this long-looked-for consummation is still in the distant future. The book is a compilation of very sensible and generally well-known prophylactic, hygienic, and dietetic suggestions, bearing upon the well-being of the patient himself, his immediate family, and the general public. To the wisdom of most of them we heartily subscribe, but we think it will be a very long time until the "various States" shall "take steps to assist tubercular persons who are dependent upon manual labor for support," and until "the various health boards" shall "see that such persons are not employed in factories or counting-rooms." Some of the author's explanations of the phenomena of pulmonary tuberculosis are hardly consistent with the teachings of scientific medicine. We question the utility of having the invalid's attention concentrated upon himself, as must necessarily ensue should he weigh himself twice a day, count his pulse, and take his temperature every two hours. "It may be interesting for the pulmonary invalid to understand precisely the cause of his rapid pulse," but it is hardly conducive to his personal well-being. Nor do we think that the facts justify the assertion that, despite the expertness of a physician as regards physical diagnosis, "it is impossible for him to say definitely that a given case is or is not pulmonary tuberculosis without the assistance of microscopical examinations" of the sputum. While the book contains many commendable suggestions, as a whole, it had better remain unread by the vast majority of consumptives. These latter will fare better under the judicious care of an intelligent physician, who will make suggestions suitable to each individual case. They should be spared the inevitable anxieties which the indiscriminate reading of the book can but engender.

Plea for a Simpler Life. By George S. Keith, M.D., F.R.C.P.E. New York: Macmillan & Co., 1895.

The simpler life for which Dr. Keith makes his plea is to be attained by abstinence from butcher's meat and alcoholic stimulants, and by a very moderate use of other foods. In disease the remedies to be avoided are, to use his own words, "medicines of all kinds, alcoholic stimulants, and food; and nature's methods, which we advise to be substituted for them, or rather to be allowed full play without them, are rest, not forgetting rest to the stomach; warmth, or, in rare cases, cold; a free supply, usually of water, and always of fresh air;

and sufficient time for the organs to recover their ordinary working powers, and especially for the nervous system to make up its wasted energy." The doctor has practised his methods himself for forty years, and he thinks at upward of 80 he is a very good specimen of an old man.

We have no doubt whatever that the middle and upper classes of English and Scotch society eat too much beef and mutton and consume too much alcohol. For them the simpler life advocated by Dr. Keith would mean both better health and longer life.

The author, however, entirely ignores the poorer classes, who, after all, constitute the majority. According to Mrs. Barnett (quoted by Mrs. Ernest Hart) the London working-man's attempt to make wages meet expenses results in starvation for the family: "the children have to put up with less than they need; the mother goes without rather than let the children suffer." She further says, "While wages are at the present rate, the large mass of our people cannot get enough food to maintain them in robust health." Dr. Keith's simpler life is of no service here. The author has been so dazzled by a part truth that he cannot see the whole truth.

A Pictorial Atlas of Skin-Diseases and Syphilitic Affections, in photolithochromes from models in the Museum of the Saint Louis Hospital, Paris, with explanatory wood-cuts and text. By Besnier, A. Fournier, Tenneson, Hallopeau, Du Castel, Feulard, and Jacquet. Edited by J. J. Pringle, of London. Philadelphia: W. B. Saunders, 1896.

Part IV of this handsome and valuable work, already noticed in the University Medical Magazine, is before us. Plate XIII is an illustration of *mycosis fungoides*, showing a very large patch in a state of fungoid ulceration. This disease is commoner, both in Europe and in this country, than was formerly supposed, and is liable to escape recognition, mainly because of its proteiform nature, its polymorphism, its periods of quiescence, or of temporary remissions, and frequently because of the prolonged deviation of the malady itself. Besnier, in the notes of the case, gives a concise and excellent description of the clinical features of the disease in general, which we regret space forbids quoting.

Plate XIV represents a common variety of *psoriasis*, but the drawing and coloring are inferior to that of the other plates. Plate XV represents *tubercular leprosy* of the face including the ear, the coloring being life-like. In addition to this plate Besnier gives two photographs of the same variety of this disease, showing the results of prolonged treatment (eight years) of the tubercles and nodules of the face by electro-galvanic cauterization. Each tubercle by this method is cauterized interstitially by means of single or multiple points. The results as shown by these photographs are certainly remarkably good, and Besnier speaks in praise of the treatment wherever the leprous tuberculization is localized. Such results go to show that

much can be done by judicious treatment to relieve this shocking and terrible disease. Plate XVI represents another case of *mycosis fungoides*, resembling a sarcoma and carcinoma of the breast and axillary region, and is reported by Feulard. We cordially commend the atlas as being in every way valuable.

HAND-BOOK OF THE DIAGNOSIS AND TREATMENT OF SKIN-DISEASES. By ARTHUR VAN HARLINGEN, PH.B., M.D. Third edition. Philadelphia: P. Blakiston, Son & Co., 1895.

In the present edition of this work a number of additions have been made, in order to bring the subject more fully abreast of the times. Numerous foot-notes and references have been inserted, new illustrations introduced, and the article on tuberculosis of the skin has been rewritten.

The alphabetic arrangement of the diseases has been retained, and while it best suits the general practitioner, for whom, principally, the work was written, the plan seems unsuitable from the stand-point of the dermatologist.

The author has devoted but limited space to the discussion of the pathology of the skin, but the differential diagnosis receives extended consideration, and treatment is in most instances described in a full and satisfactory manner. As a manual for quick reference for the general practitioner this work will be found useful. In our opinion the reproduction of a chromolithograph from the *Journal of Cutaneous and Genito-Urinary Diseases*, illustrating the differential diagnosis of variola, rubeola, and roseola, is of doubtful utility, as the characteristics of these eruptions are not well brought out. It should be added, of course, that the faithful reproduction of many of the cutaneous lesions is most difficult.

DIET IN SICKNESS AND IN HEALTH. By MRS. ERNEST HART, formerly student of the Faculty of Medicine of Paris, and of the London School of Medicine, etc. With an introduction by SIR HENRY THOMPSON, F.R.C.S., M.D., London. Philadelphia: W. B. Saunders, 1895.

The book begins with a statement of the composition of the different kinds of food and of the special value to the economy of nitrogenous foods, carbohydrates and hydrocarbons. Of alcohol, coca, tea, coffee, cocoa, and chocolate, the author speaks on the whole with wise discrimination, pointing out clearly both their value and their danger. The chapter on coca is interesting, but the virtues of the plant are presented in too attractive a light. The victims of the cocaine habit are becoming so numerous that the use of even the plant should be discouraged; and, in fact, there is very little need for it in countries where coffee and tea can be had.

The chapters on underfeeding and overeating, on thinning and fattening, on digestion and invalid foods, are all excellent, and the

remaining chapters on the dietetics of special diseases are also very good. We have never read a book which presented the subject in such an easy, natural way. The style of the author is very pleasing, being clear, graceful, and at times epigrammatic. She does not hesitate to record her personal experiences, and she does it in an effective way. While the book has been written for laymen, we are sure physicians also will find much useful information in it.

A Treatise on the Medical and Surgical Diseases of Infancy and Childhood. By J. Lewis Smith, M.D. Eighth edition.

Smith on "Diseases of Children" is such a well-known classic that a review seems almost unnecessary. Of all the books in its department it has been to the writer the "court of last resort." The latest edition not only maintains the high standard of the original work, but brings it fully abreast with the times. The chapters on tetanus, diphtheria, malaria, and cretinism are especially noteworthy as examples of the modernizing of this edition.

Notwithstanding the excellence of this great work, there are lapses, some of which are doubtless due to the proof-reader; others, however, cannot be charged to that individual. For instance, the devotion of an entire chapter of sixteen pages to scrofula seems to be out of place in these days of bacteriology. Osler says, "Scrofula is tuberculosis," and the "American Text-Book" gives but a short paragraph to the subject, in which it says that the term scrofula is now almost abandoned. The chapters on diseases of the blood, too, are very incomplete and unsatisfactory.

In the chapter on cretinism it is stated that the principal method of administering thyroid gland is by hypodermics of the glycerin extract. That is certainly not the fact in this country.

It would seem to the writer that the detailed descriptions of operations are out of place in this book; they can at the most be but incomplete.

Notwithstanding these lapses, however, the book is a most valuable one to all, especially, however, to the general practitioner, for whom it was written. An owner of one of the excellent previous editions cannot afford to be without the eighth edition.

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CLINICAL NOTE ON THE ACTION OF CHLORALOSE.

By James Tyson, M.D.,

Philadelphia,

Professor of Clinical Medicine in the University of Pennsylvania.

I was induced to make a trial of chloralose[1] as a hypnotic by meeting almost simultaneously the following paragraphs:

[From George William Balfour's "The Senile Heart," p. 285.]

"The third hypnotic of importance is chloralose, a drug of quite recent introduction, but which promises to be a most valuable addition to our armamentarium. Chloralose lowers the blood-pressure; but, even in large doses, it has no exciting effect on the heart, seeming rather to steady and regulate the action of that organ. Patients fall to sleep quickly under its use, and they waken easily and refreshed. There is no headache and no gastric disturbance, the appetite seems to be rather improved. Even when taken in excessive dose, the heart is never affected injuriously, the only result of an overdose being a certain amount of intoxication. The only drawback to the use of chloralose is a tendency to act irregularly, and to induce nervous symptoms in hysterical and neuropathic patients. The dose of chloralose is from two to eight grains, and it is best administered in a cachet. A very good way of giving chloralose is to give a cachet containing three or four grains at bedtime. Should the patient have a good night, well and good, but should he wake after an hour or two of sleep, the repetition of a similar dose will secure a good night's rest."

In another place, which I have not been able to find, I read,—

"Chloralose has all the advantages of chloral without its disadvantages."

I happened to have under my care at the time a patient with most obstinate insomnia, for whom I had used ineffectually sulphonal,

[1] Chloralose was so named by Richet and Hanriot, of Paris, and is said to be a combination of chloral with glucose,—technically anhydro-gluco-chloral. It is described as hypnotic, yet excitant to the spinal cord.

chloralamide, chloral, trional, and paraldehyde. I ordered for him ten grains of chloralose at bedtime. The effect seemed magical. He went promptly to sleep and slept soundly until morning, awaking much refreshed, and without any of the unpleasant feeling so often consequent on remedies of this class. The dose was repeated the next night and the next with like effect. On the morning of the fourth day the patient informed me that he had gone through some strange performances in the night; that he had unconsciously removed all his clothing and found himself stark naked in the morning. This experience did not impress us seriously, and the drug was repeated the following night. During the night, his wife, who occupied an adjacent room, because of being recently confined, happened to enter his apartment and found him sitting on the edge of the bed, again entirely unclothed. She succeeded in getting him into bed apparently without arousing him, and he awoke in the morning thoroughly ignorant of what had happened during the night.

A day or two later I was called upon by a friend, the son of a physician, who resided twenty miles out of Philadelphia. The son had just received a telegram from his mother urging him to come at once because of the sudden illness of his father. No particulars were given, but he begged me to go with him. I responded, and in an hour we were at the bedside of his father, a hale, hearty old gentleman of 80 years, who said he never felt better in his life and wanted to know what it was all about. The history of the case was this: The doctor, as I well knew, was a confirmed insomniac, and had been for years. He had tried every known remedy for sleeplessness except morphine, and whenever a new one arose some one of his friends was apt to call his attention to it. Thus he had recently learned of chloralose. It was recommended to him in five-grain doses to be taken in a cachet. He had taken it two nights in succession with the most charming effect, and was delighted with it. The day preceding the next night was stormy and he was not able to take his usual exercise out of doors. In the evening he ate freely of some favorite food, rather too much. Hence he had a little indigestion. At bedtime he took his five-grain cachet of chloralose, but it produced no effect. Twelve o'clock came, but no sleep. He then took half of another cachet, which was also without effect. In a couple of hours he took the remaining half of the cachet. In the morning his wife found him asleep, breathing stertorously, and could not arouse him. She became alarmed and wired for his son. A little later he awoke feeling very well and thoroughly unconscious of anything unnatural. His wife thought it best, however, to keep him in bed until we arrived.

About the same time I was visiting, in consultation, a physician in Philadelphia, who had, among other symptoms, stubborn insomnia. Nothing but morphine could make him sleep. It was just after I had had the first happy experience with the drug that this occurred, and I advised chloralose in ten-grain doses, recommending it confidently. It was some days before I heard from him, when one morning before I was out of bed a carriage drove up to my door, from which stepped the son of the physician. He begged me to come at once, saying that the medicine I had given his father had not agreed with him.

On the way up I learned that a dose of ten grains of chloralose had been taken, and as there was no effect, the doctor, on his own responsibility, repeated the dose at the end of an hour. I had not advised a second dose. In a short time he fell asleep, and a little later began to be restless, and still later unmanageably violent. The family physician was called, and it required all his strength to keep his friend and patient in bed. The struggle lasted from soon after midnight until I was sent for at daylight. During this time the patient had evacuated his bowels and bladder involuntarily. By the time I arrived he had fallen into a quiet sleep from which he was easily aroused. He recognized me at once, spoke intelligently, and wondered why I had been sent for.

Such was my earliest but not my last experience with chloralose, which I have learned to value highly, since I believe all of the foregoing mishaps, which occurred so nearly simultaneously that I could not profit by any one separately, are explainable. In the first place, my first dose was needlessly large, although it was determined by a published statement that thirty-one grains may be given without inconvenience. Looking into the subject, I find that the dose recommended by those who have made extensive trials with it is from one and three-quarters to fifteen grains, with the injunction of Haskovec, who used it largely in cases of insanity, that it should not exceed a gramme or fifteen grains. After my experience, under no circumstances should I advise a dose as large as the last. The smallest dose recommended, one and three-quarters grains, seems, on the other hand, entirely too small for adults. From three to five grains appear to me nearer the correct dosage, more generally the latter. I believe my friend, the physician, who took the five-grain dose and subsequently a second five grains in divided doses, practically got the effect of the ten grains at one time, partly because of the difficult solubility of the drug and partly because of the indigestion from which he was suffering at the time, which further delayed absorption. Possibly, also, he may have taken the second five grains at once, because he simply tore the cachet in two and never noticed

whether the drug was contained in one or the other half. Since this experience, I have employed chloralose for insomnia a number of times, and, as I have already said, believe it to be a valuable drug for this purpose. Certain precautions must, however, be taken to secure its activity. The most important of these is that it should be given in solution. If administered in a cachet or uncovered powder there are a certain number of chances that it will lie in the stomach for some time undissolved, and therefore fail of its effect, while if the dose is repeated there are more chances that the two doses will act conjointly, and some one or more of the unfavorable effects alluded to may succeed. It is most readily soluble in hot water, but may also be taken dissolved in hot milk, and, perhaps, this last is the best method of administration. It is, however, bitter in solution, and if this quality is objectionable a cachet becomes the next best vehicle.

The class of cases to which it is best adapted is, undoubtedly, the simple insomnias, since it is not, in any high degree at least, an analgesic. It has been largely used abroad in insane asylums for its effect upon the excitable insane, but I have used it in the insomnia of heart-disease and Bright's disease. Its advantages are its promptness of effect when properly administered, and the absence of unpleasant results the next day, and especially of the prolongation of the soporose effect into that day, so often incident to hypnotics; nor is there headache. I cannot deny, however, that the former effect has occurred to me especially in cases of valvular heart-disease, where absorption is often slow because of the passive congestion of the stomach. Such effect has been however, a simple drowsiness.

I must not omit to add, also, that in addition to those met by myself, other unpleasant effects of the drug have been noted by clinicians, especially when employed in tubercular consumption. Thus, in a patient to whom Rendu gave a four-grain dose, he was called in two hours to find her "insensible, the pulse 180, the movements of the heart imperceptible, and with epileptoid movements of the limbs. The skin was covered with cold perspiration, and death seemed imminent." She was revived by hypodermic injections of ether, and the convulsions were controlled by one-twenty-fifth grain of morphine injected hypodermically. *She returned to consciousness without any knowledge of what occurred.* Similar action is reported in other cases of tuberculosis with doses of three to six grains. Such effects from the smaller of these doses seem in the light of my experience surprising. But in this disease, especially where there is great debility, the drug is best avoided. Hysterical symptoms may be induced by it which must not be mistaken for more serious effects. Quieting effects may be expected in the convulsions of tetanus. In fact, such effects are reported.

THE PUPIL REFLEX IN ABSOLUTE BLINDNESS.[1]

By George C. Harlan, M.D.

The pupil is dilated and fixed in so large a proportion of cases of absolute blindness, in which the ball is sound and the media are clear, that the impression is quite general among those whose attention has not been particularly called to the subject that reflex pupillary action is not compatible with loss of light-perception. This is less to be wondered at when we consider that few of the ophthalmological text-books contain anything to correct this misapprehension, and that many of the neurological works do not bring the point out clearly. These considerations may justify the report of the following cases :

W. G., a bright and well-developed boy, 16 years of age, recently admitted as a pupil to the Pennsylvania Institution for the Instruction of the Blind, had good health until about a year ago. He then had a severe illness, which his attending physicians attributed to intracranial tumor, and during which his vision failed, and at the end of three months was entirely lost. This was all that could be learned of the history of his case. He was represented as in good health at the time of his admission to the institution, but it was soon found that he was unequal to any mental exertion, and had frequent headaches with occasional attacks of vomiting, and that it was necessary to return him to his home in a distant town.

There was entire absence of light-perception in both eyes ; repeated testing and close watching left no doubt on this point. The pupils were dilated—about seven millimetres—and the eyes had the vacant stare and objectless movements of blindness, but the external appearances were otherwise normal. The pupils responded sluggishly and partially, though very evidently, to diffused daylight from a northern window, but promptly and completely to direct sunlight. The ophthalmoscope showed typical post-neuritic atrophy of both disks, which, in the absence of other probable cause, might have been considered sufficient to account for the blindness.

Of course, a moment's reflection shows that there is nothing in the behavior of the pupil in this case that does not admit of ready explanation, and that it is rather remarkable that such cases are not more frequently observed. If the well known path of reflex pupillary action—from the retina through the optic nerve, optic tract, corpora quadrigemina, and Meynert's fibres, to the centre for pupillary con-

[1] Read before the American Ophthalmological Society.

traction in the aqueduct of Sylvius, and thence returning to the iris through the fibres of the third nerve—be unimpaired, there is no reason why a lesion situated in the cortical visual centre, or in the fibres connecting this centre with the corpora quadrigemina, should necessarily interfere with the movements of the pupil. Ferrier states that a flash of light before the eyes will cause the pupils to contract in animals deprived of their cerebral hemispheres. Perhaps the reason why pupil reaction in absolute blindness is so rare is that a bilateral lesion would be required to cause complete cortical blindness, even in one eye (bilateral hemianopsia), and that so extensive a disease would be likely to involve other portions of the visual apparatus. As in the case just reported, the optic atrophy, evidently consecutive to neuritis, observed with the ophthalmoscope, would appear to be sufficient of itself to obstruct light stimulus, but has done so only partially; the pupils acting sluggishly and incompletely to diffused daylight, though promptly and fully to direct sunlight. The Wernicke symptom—hemianopic pupil reaction—has been much discussed of late as a means of locating unilateral lesions; and in the Argyll-Robertson pupil we have loss of reflex without loss of sight.

I expected to find a number of cases for the observation of the pupil in absolute blindness in the Pennsylvania Institution for the Blind, and with the assistance of Dr. George Cross made a search there for such cases; but among the 175 inmates we could find only three with sound balls and clear media who were entirely without the perception of light. Those who were conscious of direct sunlight were excluded.

A. W., a girl, 18 years of age, in excellent health, blind for two and a half years after cerebro-spinal meningitis; complete optic atrophy. Disks bluish-white and somewhat stippled, with margins not sharply defined and slight choroidal changes about them; retinal arteries slightly contracted; no nystagmus; pupils regular and seven millimetres in diameter; no reaction to diffused light, but decided though slow contraction when exposed to direct sunlight, more noticeable after prolonged shading, which, however, does not cause increased dilatation.

J. V., a healthy man, 20 years old, lost sight at 7 years of age, also from cerebro-spinal meningitis. Complete white optic atrophy. Disks stippled and margins sharply defined; no decided choroidal changes; nystagmus; pupils 5.5 millimetres; no reaction by usual tests, but after the eyes had been bandaged for half an hour the pupils were found to have dilated to eight millimetres, from which they gradually and imperceptibly returned to their former size.

They contracted decidedly, though slowly, on exposure to direct sunlight.

J. McK., aged 15 years, a well developed muscular boy, large for his age, and of fair intelligence, has never seen; is not conscious of the shadow of the hand, or of a black screen passed before the eyes in direct sunlight. No history of blindness in any of his relatives, except a brother, who was born blind. He has two sisters with perfect vision. The brother was an inmate of the institution some years ago, and the cause of his blindness is recorded as "congenital, probably optic atrophy." There is constant nystagmus; a rather slow movement of the balls, chiefly horizontal, but occasionally slightly oblique. Ophthalmoscopic examination of the right eye shows a hypermetropia of seven or eight D. The disk is scarcely distinguishable, except by the emergence of the retinal vessels, which are somewhat narrow. It is a little raised above the level of the fundus, and its margin is obscured by coarse striations. In the left eye the disk margins are less obscure. There is no suggestion in either of the usual picture of optic atrophy. The constant nystagmus makes a satisfactory examination impossible.

The pupil in each eye, in the diffused light of a room, is regular and 4.5 millimetres in diameter. There is perceptible variation with the movements of the ball, particularly with that down and in, but no response to the light from a northern window. When, however, the eyes are bandaged, for awhile the pupils dilate a little more than a millimetre, and when again exposed to light, though no motion is perceptible, they return to their former size in a few seconds. When exposed to direct sunlight, even without previous occlusion, the pupils contract down to two millimetres with a movement that is easily perceptible, but deliberate and very different from the prompt action of a normal iris.

None of these pupils responded to artificial light from the ophthalmoscopic mirror.

It is probable that in these cases there is complete cortical blindness with slow and very imperfect transmission of light excitation to the centre for pupil contraction. In the congenital case we may suppose absence of cortical visual centres and imperfect development of the optic nerve, or, perhaps, intra-uterine cerebral disease. It is remarkable that two members of a family should be thus affected, without heredity or other recognizable cause. Dr. Gould[1] has reported a case of complete white optic atrophy, consecutive to a neuritis occurring in connection with obscure spinal and cerebral

[1] Eighth International Ophthalmological Congress.

disease, in which the dilated pupils, although they failed to respond to the usual tests, contracted gradually and imperceptibly to the normal size when the patient was seated before a window. They would probably dilate if the eyes were bandaged and contract visibly if exposed to direct sunlight.

I commenced to suspect that direct sunlight might cause contraction in all cases, and that perhaps the heat might have some effect on the iris; but Dr. Risley has removed all doubt on that point by showing me a patient whose pupils are absolutely indifferent to sunlight. There is wide mydriasis and absolute optic atrophy of unknown cause. Her optic nerves have completely lost their function, or there is lesion in some other part of the reflex path.

In all these cases the pupil contracted with a forced effort to close the lids. Gifford,[1] who has recently called attention to this reaction, thinks that it is a result of an overflow of stimulus from the orbicularis centre to the centre for pupil contraction, and Jackson suggests that it may be "due to an inhibition of the action of the dilator of the pupil accompanying an inhibition of the palpebral muscle of Müller which acts in opposition to the orbicularis." A simpler explanation, and I believe the true one, is that the sphincter pupillæ acts in association with the superior rectus, which always contracts when a forcible effort is made to close the lids. This association is well known to obtain during sleep.

Some interest attaches to the condition of the pupil in hysterical blindness as indicating the probable seat of the morbid process. Gowers thinks that this morbid process is in the cortex, and says that the pupillary action should decide. Leber also maintains that there is a central disturbance, and retains the expression "retinal anesthesia," not as implying that the retina is necessarily involved, but merely as a convenient name for a condition that is not understood.

Priestley Smith,[2] on the other hand, thinks that "hysterical amblyopia, neurasthenic amblyopia, and sympathetic amblyopia are conditions of peripheral anesthesia, due to reflex contraction of the vessels which nourish the retina," and maintains his view chiefly by a study of the visual fields. He does not mention the pupil. I have usually found the pupil normal in cases of hysterical blindness, of which I have chanced to meet with a considerable number, and believe that this is the rule; but in one case of complete monocular blindness in a typically hysterical subject that I reported to the

[1] Archives of Ophthalmology, July, 1895.

[2] Ophthalmic Review, Vol. III, No. 31.

society a few years ago,[1] a pupil dilated *ad maximum* and absolutely fixed was promptly restored to normal size and complete mobility by mental impression (the application of a wooden imitation of a magnet). My experience would seem to indicate, so far as the evidence of the pupil is concerned, that the morbid process in hysterical blindness may be either central or peripheral, or both, but that it is more frequently central. It must be remembered, however, that the mydriasis in the case just referred to may not have been due to any obstruction in the reflex path of pupillary contraction, but that it may have been, and in all probability was, the result of excitation of the pupil-dilating centre in the medulla, which is known to be influenced by the emotions. In other words, there is very little doubt that it was not a paralytic but an irritation mydriasis, such as is met with in, for instance, the psychical excitement of acute mania; a mydriasis which is more easily referred to muscular action than to elastic contraction, as simple elasticity can act only by relaxation of its opponent.

This case of hysterical monocular blindness has seemed to me to be of special interest, because it was not merely a more or less dubious subjective phenomenon, but presented the definite objective symptom of a dilated and immobile pupil. It gives little encouragement, however, to localization of the morbid process, if even that term is not too materialistic to be applied to such cases as this, which, perhaps, in the present state of our knowledge, can scarcely be rescued from the domain of metaphysics. Still, it is easier to conceive of a retinal cause, though the ophthalmoscope may show no sign of it, than to understand how a cause acting in the cortex, or anywhere behind the commissure, could account for complete blindness in one eye, the other remaining unaffected, without doing violence to what is known of the anatomy and physiology of the brain.

Picric Acid in the Treatment of Burns.

D'Arcy Powers prepares a solution of picric acid by dissolving a drachm and a half in three ounces of alcohol and adding this to a quart of distilled water. Blisters are pricked and the serum allowed to escape. Sterilized gauze soaked in the solution is then laid over the affected surface. On this is placed a layer of absorbent cotton retained with a bandage. This is left on for three or four days. On removal it must be thoroughly soaked, as it adheres closely. The second dressing may be left on for a week.—*British Medical Journal.*

[1] Transactions of the American Ophthalmological Society, Vol. III, p. 649.

MATERNITY DEPARTMENT OF THE UNIVERSITY HOSPITAL.

By Barton Cooke Hirst, M.D.,

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Within the past seven years a perfectly appointed Maternity Hospital has been added to the magnificent equipment of the University Hospital. The University Maternity now contains fifty beds. It has two wings specially constructed to furnish isolated and private quarters for the women during confinement. Each woman is given a private room from the time her labor begins till puerperal convalescence is far enough advanced to permit her to be moved into the ward,—about ten days. The hospital is provided with a modern sterilizing plant for dressings, bedclothing, etc., and for water.

Every safeguard known to modern science is thrown about these patients, and they are examined and watched over prior to, during, and after their confinements with much greater care than is usually given to the best class of private patients.

Almost all the women are cared for free, though it is expected, of course, that they shall pay a small sum weekly—$7—if they are able. There is no distinction made as to residence, social state, or color, except that in the last matter one ward is set aside for colored patients.

As might be expected, the proportion of difficult and complicated labors is very large. Already the physicians of this and neighboring States appreciate the advantage of sending to a perfectly equipped maternity hospital a woman whose labor promises to be difficult and dangerous, and who is unable in her own home to command the attention that her case requires.

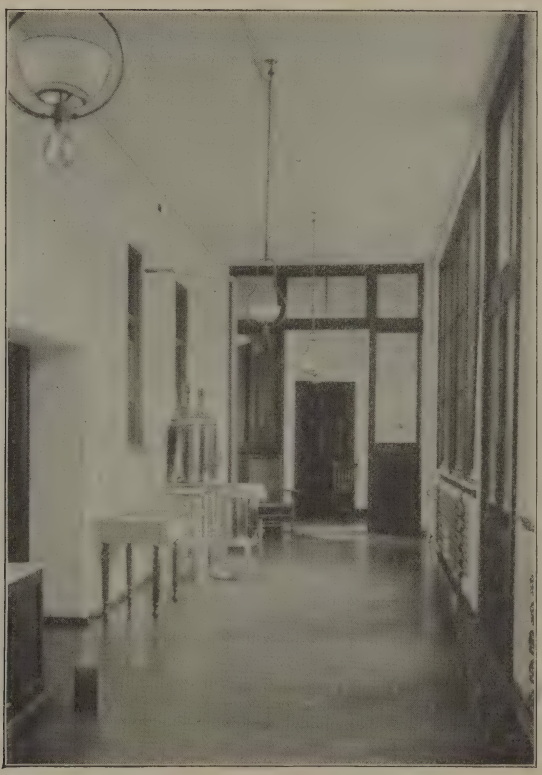
Constant Irrigation in Septic Puerperal Cases.

Gliakoff describes a method for the treatment of puerperal cases by constant irrigation of the uterus with solutions of carbolic acid and permanganate of potash. A 1-per-cent. solution of carbolic acid was first employed, and followed by a weak solution of permanganate of potash, having a rose-color. The irrigating fluid was kept at 104° F., and allowed to flow for six hours. The results were excellent. Only one patient out of twenty-eight thus treated died, and she was not treated until three weeks after labor, and had pyemia. The analgesic effect of the irrigation was marked.—*Journal de Médecine militaire.*

University Maternity, front view.

Rear view, showing court and two wings, containing separate rooms for parturient patients.

Ward for convalescent patients.



Corridor connecting the two wings, showing sterilizing apparatus for water.

GESTATIONAL COMPLICATIONS AND DYSTOCIA SUBSEQUENT TO ANTERIOR FIXATION OF THE UTERUS.[1]

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(1) Introductory.

When, in 1885, Dr. Howard A. Kelly first introduced the operation of abdominal hysteropexy—or, as he has more recently termed it, "uterine suspension"—as a substitute for the time-honored Alexander operation, the entire medical world welcomed the innovation as a decided improvement over the latter method in the treatment of uterine retro-displacement. The shortening of the round ligaments by the inguinal method had not met with a degree of success proportionate to the urgency of the condition, and the percentage of failures, taken in association with the difficulties of the operation in the hands of the less skilful surgeons, was a strong incentive to the adoption of a method that offered better promise of success, and at the same time was decidedly less complicated in its technique. The most radical objection that could at that time, and for a few years subsequently, be urged against the adoption of the new operation in its improved form of direct suspension was that it involved the opening of the peritoneal cavity with all of the risks attendant thereon; but the marvellous progress that had been made in abdominal antisepsis had largely annulled the force of such an objection, and the operation rapidly grew in favor with the gynecologists.

It was not long, however, before disturbing rumors began to circulate as to the pernicious influence of the method upon subsequent pregnancies and labors. While it was not true of every case, the number of reported instances of dystocia of greater or lesser severity offered sufficient ground for apprehension, and efforts were made by various operators throughout the world to so modify the technique of the uterine fixation as to obviate the danger of subsequent difficulty in pregnancy and parturition. Thus, there has arisen a large number of methods of anterior fixation of the uterus having for their double object the restoration of the displaced organ to its normal position, without at the same time producing such a degree

[1] Read before the Barton Cooke Hirst Obstetrical Society of the University of Pennsylvania, November 4, 1896.

of fixation of the organ as to interfere materially with its functions of gestation and parturition.

(2) Methods of Anterior Fixation.

These methods and modifications of methods may be conveniently classified, according to the essential principle involved in their performance, into five main groups, as follows: (1) Those methods depending for the reposition of the uterus upon a shortening of the round ligaments; (2) the varieties of ventrofixation; (3) the methods of vaginofixation; (4) vesicofixation; and (5) cervicofixation, or trachelopexy. Briefly enumerated, this classification embraces the following operations:

(1) *Shortening of the Round Ligaments.*—(1) Alexander's operation, the drawing out and amputation of these ligaments in the inguinal canal after bimanual anteversion of the uterus.

(2) Wylie's operation. Intraperitoneal shortening of the round ligaments. (Each ligament is grasped by a couple of forceps in such a manner that it will be divided as nearly as possible into three equal portions; by lapping these portions the ligament is doubled on itself twice, and three thicknesses of ligament are placed between the side of the pelvis and the anterior wall of the uterus. The ligatures must not be drawn tight enough to constrict the circulation.)[1]

(3) Polk's operation. Intraperitoneal shortening of the round ligaments. (The slack in each ligament is taken up in front of the uterus, and the two ligaments are fastened together by sutures.)[2]

(2) *Varieties of Ventrofixation.*—(1) Kelly's operation. Suspensio uteri, including median abdominal incision, separation of peritoneal adhesions, anteflexion of the uterus, and suturing of the posterior surface of the uterine fundus to the peritoneum and subperitoneal fascia of the anterior abdominal parietes between the lower angle of the incision and the bladder.

(2) Fowler's operation. A variety of ventrofixation in which the uterus is fixed by making use of the superior ligament of the bladder for the purpose of forming an artificial utero-ventral ligament. This prominent fold of peritoneum extends from the summit of the bladder to the umbilicus, and encloses the urachus and the obliterated hypogastric arteries.[3]

(3) Czerny's and Leopold's operation. A variety of ventrofixation in which the anterior aspect of the body and the fundus uteri are sutured directly to the abdominal wall. The stitches are afterwards removed, whereby the uterus is left more mobile than in cases in which the sutures are retained.[4]

(4) Olshausen's operation. A variety of ventrofixation in which

the uterus is fixed by suturing the points of uterine insertion of the round ligaments and a portion of the broad ligaments to the abdominal wall.[4]

(3) *Varieties of Vaginofixation.*—Schücking's operation. (1) The primary vaginal fixation. (The uterus being bimanually anteverted, a threaded needle, enclosed in a canula, is passed from the os through the cavum uteri to the fundus, where it is pushed through the wall and the anterior cul-de-sac; the ends of the thread are firmly tied, fixing the fundus, in strong anteflexion, to the anterior vaginal wall, where it is eventually held by bands of adhesive lymph.)[5]

(2) Mackenrodt's operation.[6] Vaginofixation, including a median longitudinal incision in the anterior vaginal wall, opening the vesico-uterine pouch, and extending from the centre of the cervix to within an inch of the meatus urinarius; anteversion of the uterus; and suturing of the fundus to the vaginal wall, thus obliterating the vesico-uterine space. (It is claimed that this operation fixes the uterus in a position corresponding more closely to the normal than do ventrofixation and Alexander's operation, but Leopold[7] claims that after this operation the relations of the uterus to the bladder are entirely abnormal, the uterus is fixed in an unnatural position, and, unless Douglas's pouch is first opened and all adhesions thoroughly separated, it is useless. To the obliteration of the vesico-uterine space must be attributed the bladder symptoms, occasionally noted after this operation.)

(3) Dührssen's operation.[8] [9] Vaginal celiotomy. (This includes a transverse incision through the anterior vaginal wall close to the cervical attachment; dissection away of the bladder and opening of the vesico-uterine pouch; passage of the fixation-sutures as near the fundus as possible, which is secured to the edges of the vaginal wound; and closure of the vaginal incision—now converted into a longitudinal wound—by a continuous catgut suture.)

(4) Vineberg's[4] and Wertheim's operation.[10] A variety of vaginofixation in which the round ligaments, and not the fundus, are sutured to the vagina. (Vineberg supplements this by an additional suture passed across the anterior surface of the uterus midway between the internal os and the fundus and carried through the vaginal flaps. Wertheim primarily sutured the round ligaments to both angles of the peritoneal wound, or to the bladder at the reflection of the peritoneum, and not directly to the vaginal wall.)

(4) *Varieties of Vesicofixation.*—(1) Vesicofixura uteri.[11] An operation recently adopted by Mackenrodt.

(2) Byford's operation[12] (comprises anterior colpotomy; suture of the fundus uteri to the peritoneal covering of the upper portion

of the bladder; suture of the round ligament to the uterus above its normal uterine insertion at a point as far towards the pubic extremity as can be grasped; and closure of the vaginal wound in such a way that the bladder regains its vaginal and uterine attachments, and the connective tissue from either side of the anterior fornix is drawn together in front of the uterus and forces the cervix backward. Byford claims that this operation "possesses an advantage over vaginal fixation in that the position of the uterus is normal, the bladder resumes its normal relation to the uterus and vagina, and there is only slight liability to complications in childbirth. The attachment of the fundus is peritoneal and less firm than that from ordinary ventral fixation, and will undoubtedly stretch during pregnancy").

(5) *Varieties of Cervicofixation or Trachelopexy.*—(1) Richelof's operation[5] (comprises loosening of all adhesions; bimanual anteversion of the uterus; freshening of the posterior surface of the vaginal portion of the cervix; and suturing of this to the posterior vaginal wall).

(2) Frommel's operation[5] (comprises loosening of the uterus from its connections; anteversion of the organ; suturing of the recto-uterine ligaments in the neighborhood of their origin from the uterus to the peritoneum of the lateral pelvic wall).

(3) Freund's operation[2] (comprises suture of the utero-sacral ligaments to the posterior wall of Douglas's pouch, and obliteration of the pouch by aseptic adhesive inflammation by the use of iodoform gauze).

(3) Testimony of Writers.

That the danger of dystocia subsequent to any of the foregoing operations is not a fictitious or supposititious one the statements of many writers certify. Hennig[5] remarks that "pregnancy may be disturbed and even interrupted by the fixation." Mackenrodt[13] states that a normal pregnancy and labor are only possible when the adhesions following the operation of uterine suspension gradually loosen spontaneously. If this does not occur, abortion will follow, or a critical condition develop during labor, threatening rupture of the uterus, with loss of mother and child. Should pregnancy and labor be successfully endured, it is very probable that the retroflexion will again develop. In cases in which the uterus has been brought by operation into marked anteflexion, the tubes are usually forced downward and backward, and becoming pathologically adherent conception is less probable. It is a better operation to suspend the uterus by ventrofixation than by vaginal fixation, because it is possible for the adhesions to more readily loosen spontaneously, and danger of hemorrhage and sepsis is less. These remarks apply es-

pecially to vaginal fixation of the uterus through the fundus. When, on the contrary, vaginal fixation is performed through the interior of the uterus, the conditions are more favorable for future conception and normal pregnancy and labor. Graefe[14] advises against performing the operation of vaginal fixation on women capable of bearing children, and recommends in its place ventral fixation or Alexander's operation. Olshausen[15] remarks that the suturing of the anterior wall, which is so warmly advocated in many quarters, offers the objection that it forms a too rigid and dense adhesive band, which is liable to give trouble in the event of pregnancy from overstretching of the posterior wall of the uterus. Noble[16] writes, "My preference is to shorten the round ligaments in cases having no adhesions, if the patient is young and liable to become pregnant, as I believe that pregnancy and labor are less likely to be interfered with than is the case when the uterus is attached to the abdominal wall;" and, again, in speaking of the Alexander operation, he says, "In my judgment its advantages are that it is less apt to interfere with pregnancy or labor." Goelet[17] states that "vaginal fixation is objectionable because it substitutes a fixed anteflexion for a movable posterior displacement." The recent unfavorable reports of complications during labor following it offer another very serious objection to this operation. The best evidence of its inefficiency is that its originator, Mackenrodt, has abandoned it. Leopold[7] claims that recent reports concerning the serious complications arising in cases of pregnancy in vaginofixed uteri furnish a powerful argument against the operation. Bovée[18] states that "we very frequently learn of difficulties complicating the operation of hysteropexy, and in many cases abortion seems to be a direct result." Clarke[19] says that "ventrofixation may interfere very seriously with the progress of pregnancy, and should rarely be resorted to in virgins or in women who have not reached the menopause, unless the adnexa have been removed by reason of disease or morbid changes;" and he repeats, "It should be again observed that the Alexander operation, as well as hysterorrhaphy, when resorted to in women who have not reached the menopause, may so firmly fix the uterus as to interfere seriously with the progress of a normal pregnancy. The patient should be made aware of the full consequences of either operation, and be made to recognize the possibility of not being able afterwards to carry a child to the completion of pregnancy." Edebohls[11] writes, "Events reported in recent literature have greatly modified the indications for the several retroversion operations. The discussion of the relative merits of these operations must now be carried to a higher plane than that of mere technique and immediate and remote anatomical results.

Their greater or less interference with the functions proper of the uterus, childbearing and childbirth, constitutes the higher standard by which they must be judged;" and, again, "Vaginal fixation of the uterus should never be performed *upon a woman liable to future pregnancies*, under any conditions, when ventral fixation or shortening of the round ligaments will meet the indications just as well or better," and, still again, "Neither vaginal fixation nor ventral fixation should be performed *upon a woman liable to future pregnancies*, for the cure of an uncomplicated retroversion of the uterus," with the one exception of tearing or sloughing off of one of the round ligaments from the uterine cornu during or after an Alexander operation, in which case he recommends ventral fixation as the lesser of the two evils. Michaelis[20] concludes "that while in the majority of cases of labor following ventrofixation of the uterus the process takes a favorable and uneventful course, in not a few, complications of considerable gravity may readily be encountered, and, therefore, the opinion which is so universally held that ventrofixation has no special influence on subsequent labors is not fully justified." Stinson[21] writes, "From a careful study of cases I believe that operations such as vaginal fixation and ventral fixation should not be performed. With vaginal fixation the uterus is placed in pathologic anteflexion, where it becomes fixed by adhesions, which will in all probability interfere with pregnancy and labor, possibly leading to uterine rupture, with fatal results to mother and child; otherwise, retroversion is likely to recur. With ventral fixation the uterus is changed from a pelvic to an abdomino-pelvic organ, more or less fixed according to the extent of the parietal adhesions, which, if not dense, may give way and the old displacement recur; conception is less likely to occur on account of the high and more or less fixed position of the uterus; there is liability of intestinal adhesions, etc.; occasionally the patient dies from the operation or from sepsis; and ventral hernia is a possible contingency. Should the patient become pregnant, she is liable to abort; and should labor go to full term, it will in all probability not be a normal one,—possibly it will be greatly prolonged, or rupture of the uterus, with loss of mother or child or both may occur." Finally, Condamin,[22] in speaking of the cure of anteflexion by hysteropexy, states that while pregnancy is undoubtedly rendered possible by the operation, it cannot be denied that it may be influenced unfavorably by the fixation.

Such is the spontaneous affirmation of men of undoubted ability and reputation, who, while favoring the various operations for the relief of the gynecologic condition, deplore their unfavorable influences upon the subsequent obstetric state.

(4) Reported Cases of Gestational Disturbance and Dystocia following Anterior Uterine Fixation.

Let us now examine for a moment the notes of the actual cases of dystocia and gestational disturbances that have, from time to time, been reported in the current medical literature. In selecting these cases I have included in my list every instance of unusual occurrence in the patient's history that may in any way have a direct bearing upon the operation. Thus, if a woman who had previously borne children without any disturbing feature during the gestations and labors, should, in a pregnancy subsequent to an operation for anterior fixation of the uterus, suffer from localized pains or exaggerated vomiting during the gestation, or if at the time of labor a malpresentation be noted or some form of operative interference be required without other appreciable cause, we are justified in assuming the relation of cause and effect, and in ascribing the pathologic feature to the operative procedure. Working upon such a basis as this I have collated the following cases of gestational and eutocic disturbances subsequent to the operation of ventrofixation presented in about their chronologic sequence:

(1) Küstner[23] relates the history of a woman in the third month of a pregnancy complicated by a large myoma of the uterus. At the operation performed November 29, 1888, the myoma was enucleated and the uterus fixed to the anterior abdominal wall. Abortion, with the discharge of a four-months' fetus, occurred on December 21, three weeks after the operation. (This may have resulted from the double injury to the uterus,—the myomectomy plus the hysteropexy.)

(2) Küstner[23] also relates a similar case in which abortion followed.

(3) Gottschalk[24] records the case of a tertipara, aged 28 years, who was operated upon on November 10, 1889, for the removal of an intraligamentous ovarian cyst of the left side, followed by a ventrofixation of the retroflexed uterus. Conception occurred eleven months later (October, 1890); there were irregular bleedings from the middle of December until January 3, 1891, when the fetus was expelled. Examination showed that the anterior wall of the uterus was unusually thick, and the posterior wall as thin as paper, threatening uterine rupture. The posterior lip of the cervix was high up, almost out of reach, and quite above the true pelvis.

(4) At a subsequent pregnancy this patient aborted again. (See Leon's article.)[80]

(5) Sänger[25] reports the case of a multipara who had borne four living children and had had one miscarriage prior to the operation of hysteropexy, on December 26, 1887. She conceived in March, 1889,

fifteen months after the operation. During the pregnancy she suffered from pain in the line of incision, and there was noted a lack of development in the long diameter of the uterus. She miscarried at six months, the fetus corresponding to but three months' growth. Six weeks later the uterus lay anteverted as before.

(6) The same patient conceived again in April, 1890, and during the later months of this pregnancy she suffered much from loss of appetite, and pain in the abdomen and back, with some elevation of temperature. The vertex presented; labor occurred February 7, 1891, and was very slow in coming on; engagement did not occur; the pulse was poor, and the temperature rose to 102.1° F. She was finally delivered of a dead child by version by both feet. A chill followed the delivery, the temperature rising to 104.9° F., but falling again in twenty-four hours. A normal puerperium followed. The uterus was freely movable, although fixed anteriorly.

(7, 8, 9) Von Winiwarter[26] records three pregnancies, in all of which the patients for the first three months of gestation suffered from severe pain in the line of the cicatrix. Two were delivered at term after normal labors; the third had a premature labor at seven and a half months following ill-usage at the hands of her husband.

(10) Fraipont[27] records another pregnancy terminating in a premature delivery at about the same period as the preceding.

(11, 12, 13) Sänger[28] records a premature delivery at eight months, and two abortions, at three and five months, subsequent to ventrofixation.

(14) Jacobs[29] mentions the case of a woman, 26 years of age, who had an abdominal hysteropexy performed May 27, 1890, for adherent and painful retroflexion of the uterus. She conceived in the following July or August, and at the third month suffered from malaise and slight pains in the line of incision. She had a normal labor in May, 1891.

(15, 16) Leon[30] mentions two abortions during the first month of gestation after the performance of ventrofixation.

(17) Löhlein[31] records the case of a tertipara, aged 30 years, in whom a fixation was done July 27, 1892, for perineal tears and deep uterine prolapse. In March, 1893, severe vomiting appeared, following cessation of the menses. In the third month the vomiting was more distressing than in former pregnancies. In the sixth month bands could be felt extending from the anterior wall of the fundus uteri to the under portion of the abdominal scar. Delivery occurred on December 21, 1893, and during labor a firm band could be seen and felt, extending from the top of the uterus to the abdominal wound, tightening and relaxing as the uterus contracted and relaxed.

The patient bore a healthy child, and was safely delivered. An examination in March showed the uterus well restored to its normal state of anteflexion, and movably fixed at a normal height. In this case it seemed as though the bands of adhesion grew with the uterine enlargement, and shortened again as it subsided.

(18) The same author records an additional case of a woman, aged 35 years, who, while in the second month of gestation, underwent a myomectomy on November 22, 1892. After partial resection of the uterine wall and suturing, the retroflexed uterus was fixed to the abdominal wall at the point of removal of the tumor by means of an upper and lower silk stitch. The uterine cavity was not opened, but the patient aborted on the following day. Five months later Löhlein was called to see the woman on account of obstinate nausea and vomiting, and a pregnancy of three months was established. This progressed to term on September 13, 1893, but owing to uterine inertia delivery by the forceps was necessitated. Both mother and child recovered.

(19) Goodwin[32] records the case of a quartipara who had been operated upon by Kelly in 1889 for retroflexion uteri. Labor occurred in January, 1894. The abdomen was greatly distended, resting partially upon the thighs instead of the pelvis. The uterus was held to the abdominal attachments in front, but the posterior wall was stretched and thinned, and there was an apparent overabundance of amniotic liquid. The long diameter of the uterus was from side to side instead of from above downward. The veins of the vulva, vagina, and thighs were swollen and painful, and the cervix was long, very high up, and far back to the left; it admitted one finger, but no presenting part could be felt. With strong labor-pains the breech presented; the patient complained bitterly of pain in the left side and in the abdominal incision. The child was delivered spontaneously, but still-born; the placenta was delivered normally. The after pains were severe and long continued. Sepsis followed the labor, and an abdominal section was performed five months later. The uterus was found to be firmly held to the anterior abdominal wall. There was a mass of exudate to the left side which was not disturbed; the right tube and ovary were removed.

(20) Frommel[33] reports a breech presentation with extraction by the feet following a hysteropexy.

(21) Poltowicz[34] records a case of a woman 44 years of age, upon whom hysteropexy was performed October 24, 1889, for complete dextroversion of the uterus with ovarian prolapse. The patient had previously passed through nine normal gestations and pregnancies. The last menstruation had occurred at the beginning

of October. On December 10 and 11, she suffered from strong uterine hemorrhage followed by the discharge of an embryo and placenta (abortion at two months).

(22) Goubaroff[35] mentions a primipara, aged 23 years, who had been operated upon by Küstner on June 2, 1890, for retroversion of the uterus. Ventrofixation was performed, the uterus being fixed by three silkworm-gut sutures. Conception subsequently occurring, after a normal pregnancy labor took place in February, 1894. Examination showed the fetus to be lying in a transverse position, the left shoulder presenting. The cervix was so high up that it could not be reached without the aid of anesthesia; the upper portion of the vagina was contracted and the os completely closed; the posterior wall of the uterus was very greatly distended and threatened rupture; the urine was albuminous. To avoid the danger of rupture of the uterus, the patient having been in labor four days and the cervix still being closed, it was determined to deliver the child by a Sänger-Cesarean section. On opening the abdomen very firm and solid bands of adhesion were found extending longitudinally the width of a finger between the uterus and the inner surface of the anterior abdominal wall, the fundus uteri bearing a depression from which extended a solid bridle which required clamping and division. The veins of the broad ligament were very greatly enlarged. Both mother and child survived.

(23) Mackenrodt[36] quotes the case of a patient upon whom ventrofixation had been performed, the uterus being secured by two silkworm-gut sutures. When seen the patient had been in labor three days. The cervix was found high up, so that the entire hand had to be introduced into the vagina in order to reach it; the os had not dilated. Each pain drove the entire uterine wall into the pelvic inlet. Bullet-forceps were used to drag down the cervix, but the os was still so high up that during version, after one entire leg was out of the uterine cavity, it lay completely within the vagina. After two and a half hours' hard work the manual dilatation and version were completed and a living child delivered, but during the necessary manipulations the fixation sutures tore with a distinct jerk, whereupon the uterus became freely movable.

(24) Gallet[37] reports the case of a primipara, aged 30 years, who was operated upon in April, 1888, for a small ovarian cyst. The uterus at this time was suspended by Olshausen's method. The patient married in 1892, and shortly became pregnant. For three or four weeks during the early gestation she suffered from severe pains in the lower angle of the ventral cicatrix; these finally subsided, and labor occurred at term in May, 1893. The head presented in the

right occipito-posterior position; rotation failed to occur, and the patient was delivered by forceps. Both mother and child recovered.

(25) In another patient with irreducible retroversion of the pregnant uterus, complicated by ovarian cyst, operation was performed in September, 1890; abortion was induced, the ovary was removed, and abdominal hysteropexy performed. In April, 1891, she was found to be two or three months pregnant. During the first three months she had suffered constantly from severe pains in the lower angle of the abdominal cicatrix, which gradually disappeared. The ultimate pregnancy and labor were normal.

(26) Another patient, 43 years of age, who had given birth to five children and who had had one miscarriage, the last pregnancy occurring six years before the operation, had an abdominal hysteropexy performed on October 29, 1892, for retrodisplacement of the uterus. Suppression of the menses occurred in September, 1893; pregnancy and labor were normal, but on the fifth day of the puerperium a severe secondary postpartum hemorrhage occurred from uterine relaxation.

(27) Collette[38] records the case of a patient, 35 years of age, who had given birth to a child and had had one abortion at one and a half months. More than five years after the performance of an abdominal hysteropexy the woman became pregnant, passed through a normal gestation, but suffered at labor from uterine inertia, which necessitated delivery by the forceps. Both mother and child recovered.

(28) Miländer[39] reports the case of a sextipara, 28 years of age, upon whom suspension of the uterus had been performed on February 23, 1893, to remedy prolapse of the anterior vaginal wall and retroflexion of the uterus. Her previous pregnancies and labors had been normal, and she had once aborted. At a subsequent labor, on September 18, 1894, the fundus uteri was found two fingers' breadth below the umbilicus, while above the symphysis there was a thickened scar-tissue, the width of a hand, in the linea alba. The abdominal wall was depressed at this place. The child had been expelled, but the placenta was retained, although there was but slight hemorrhage. The placenta was readily removed by friction, and the patient made an uninterrupted recovery.

(29) In another multipara (duodecipara) the operation of ventrofixation was performed, because of prolapse of the vagina and uterus, on May 5, 1893. A subsequent labor occurred March 27, 1895. The uterus was found two fingers' breadth above the umbilicus, the child resting in a transverse position, with the head upon the right side of the pelvis, the breech upon the left. The anterior abdominal wall was adherent to the anterior wall of the uterus at the site of the

former suture. Palpation of the round ligaments demonstrated that it was not the fundus of the uterus that was found two fingers' breadth above the umbilicus, but that it was the posterior wall of the uterus which was greatly distended, while the fundus itself was lying two fingers' breadth below the umbilicus. The heart-sounds were heard in the median line. The vulva was swollen, while the cervix was drawn strongly backward against the promontory of the sacrum, the external os admitting two fingers. The membranes had ruptured, and the scapula, arm, and a loop of the umbilical cord could be felt. As dilatation was slow and pains weak, De Ribes's bag was introduced, but was only partially successful. Under narcosis it was possible to dilate the os and to make version and extraction. The child was asphyxiated but readily revived. There was a tear of the pelvic floor which was easily united.

(30) He also records the case of a primipara upon whom the operation of ventrosuspension had previously been performed. Examination showed that the urine was albuminous. The child was in a transverse position. The os was so high that it could only be reached by introducing the entire hand into the vagina under narcosis, and then it was found to be undilated. The head was prevented from entering the pelvis by marked adhesions which existed between the anterior uterine wall and the abdominal parietes. An abdominal incision was made and attempts made to break up the adhesions, but these were abandoned because of hemorrhage. Cesarean section was then performed. Both mother and child survived.

(31) Strassmann[40] records the case of a multipara, aged 36 years, whose uterus had been suspended to the abdominal wall with catgut sutures during an abdominal section in which an ovarian cyst of one side had been removed. In a subsequent labor the descent of the child was hindered by lack of uterine mobility, necessitating an easy instrumental delivery.

(32) In another case the application of the forceps was made necessary because of dangerous and extremely painful traction at the site of the fixation. After delivery there was a free postpartum hemorrhage caused by non-retraction of the uterus. It was controlled by a binder and compress.

(33) Kelly[41] mentions a patient who, during a pregnancy subsequent to hysteropexy, suffered marked discomfort and dragging due to the attachment of the womb to the anterior abdominal wall. Her labor was normal.

(34, 35) Gottschalk[42] records two cases in which the labors were exceedingly painful, although they terminated successfully.

(36) Flaischlein [43] records a case of transverse presentation following ventrofixation. The patient was attended by a midwife at first. Version was required, the child perishing during the process. The patient recovered.

(37) Wegener [44] relates the history of an octipara upon whom a fixation had been performed, the uterus being sutured to the periosteum of the symphysis. The woman had previously had two normal pregnancies and five abortions. The present gestation was absolutely normal; there was no disturbance of the bladder functions. At labor the child was found to be resting in a transverse position, and the cervix was so high that with the entire hand in the vagina it could scarcely be reached. Cephalic version was performed and the child delivered by forceps. Both mother and child survived.

(38) Olshausen [15] reports the case of a tertipara, who conceived four months after the operation of hysteropexy. During the fourth month of gestation the patient suffered from pains in the cicatrix, associated with a discharge of blood from the uterus. She advanced, however, to term, at which time examination revealed a cervix so high up that even under ether-narcosis it could scarcely be reached with the entire hand in the vagina. The anterior cervical wall was very thick and prevented the entrance of the head into the pelvis, while the posterior wall was very thin, threatening rupture. The child presented by the ear, and was delivered by podalic version. Both mother and child survived.

(39) Norris [45] records the case of a multipara, aged 23 years, who was operated upon by Noble, on May 22, 1893. In a subsequent pregnancy the thickened uterine wall at the site of the ventral fixation proved an obstacle to delivery, alternately hardening and relaxing with the pains. The posterior wall was exceedingly stretched and attenuated, and uterine rupture was threatened, necessitating the performance of cephalic version and the high application of Tarnier forceps. The child perished from compression of the cord, but the mother recovered. The uterus involuted properly, and remained fixed to the anterior abdominal wall by the silkworm-gut sutures.

(40) Michaelis [20] reports the case of a multipara, aged 39 years, who had had the appendage on one side removed, and ventrofixation performed by F. Foerster, in the spring of 1894. She had previously given birth to six living children, and had had six miscarriages. Some months after the operation she conceived, but suffered no unusual symptoms during the period of gestation. For one month prior to confinement fetal movements could not be felt, and during the last two weeks the heart-sounds could not be detected. Labor occurred

November 27, 1895. The pains were much more severe than in the previous labors, and after twenty-four hours the membranes ruptured spontaneously, the os being only partially dilated. The child occupied a transverse position, the right shoulder presenting with the dorsum posterior. Under chloroform the os was dilated and version performed, a dead and macerated fetus being extracted. Examination then showed that almost the entire anterior wall of the uterus was the seat of a large mass of muscular tissue that markedly diminished the internal dimensions of the uterus. Ten days after delivery the patient suffered from a secondary hemorrhage lasting for two or three days, and four days later there occurred another severe hemorrhage that persisted for a week.

(41, 42) Edebohls [11] records a case in which forceps were necessitated at term, and one case in which the woman died near term, of sepsis arising from the retention of a dead fetus aged 7 or 8 months.

(43) Noble [46] reports the case of a quintipara, aged 37 years, who had been operated upon by himself, September 13, 1894. She conceived in February or March, 1895, and her pregnancy was practically uneventful. She was attended in labor by Dr. W. E. Parke. The membranes broke at the very onset of labor; the pains were trifling. Noble saw her after twenty-four hours. At that time with half the hand in the vagina only the anterior lip of the cervix could be felt. Under anesthesia the os was found undilated, but dilatable. There was also a large tumor formed by the hypertrophied anterior wall and major portion of the fundus, which made a shelf-like projection on which the fetus rested. Attempts at version failed, and Porro's operation was performed. The woman died from sepsis on the sixth day, the disease antedating the Porro operation.

He also reports hitherto unreported cases as follows:

(44) Mayo's case, requiring an easy forceps extraction at term on account of large size of child, and not from complications arising as a result of the operation.

(45) Cameron's case, in which the woman suffered from severe pain in the line of the cicatrix and uncontrollable vomiting during a pregnancy two years subsequent to a ventrofixation. The woman had previously passed through four normal pregnancies. It finally became necessary to induce premature labor, which was accomplished with some difficulty, a living child being extracted. Cameron attributed the trouble to a pulling of the ligaments and adhesions during pregnancy.

(46) Dunning's case, which suffered intensely from nausea and vomiting during the early months of the gestation. The uterus remained in good position after labor.

(47, 48) Kelly, two cases of retained placenta.

(49, 50) Noble, one case of difficult forceps extraction; also a case of painless labor in a twin pregnancy, requiring a forceps delivery. The patient was attended in labor by Dr. Mary H. McLean.

(51, 52) Edgar, repeated miscarriage following spontaneous ventrofixation after abdominal section.

(53) MacLaren, one case in which a miscarriage was threatened, but the patient had at the time of reporting reached the seventh month of gestation.

(54, 55, 56, 57, 58) Five abortions (Maury, Werder, Davenport, —two cases not due to the operation, one after a fall, and the other after a hard day's work; and Ruth, induced).

(59, 60) Two miscarriages (Mundé, at the fifth month, and Kelly, not due to the operation, but following dancing).

As types of the numerous cases of grave dystocia and gestational disturbances that have been reported subsequent to the various operations of vaginofixation I have selected the following cases:

(1, 2) Mackenrodt[6] reports the case of a patient who was delivered one year after the operation of vaginofixation of a living child by forceps. Eighteen months later she was attacked by a profuse hemorrhage that lasted for seven weeks. The condition diagnosed was placenta prævia. She was delivered at the end of the eighth month of gestation.

(3, 4) He also reports two abortions following the operation.

(5) Graefe[14] records the case of a multipara on whom Mackenrodt's operation had been performed, May 6, 1894. Conception occurred November 30, 1894. Colicky pains were noted January, 1895. At labor the child was found in a transverse position and could not be turned by external manipulation. The posterior wall of the uterus was thin, and rupture was imminent. Before labor began the patient had an attack of eclampsia with several convulsions. The cervix was above the pelvic brim and directed upward. Owing to the difficulty encountered and impossibility of speedy delivery of the child through the vagina, a Sänger-Cesarean section was performed. Both mother and child made a good recovery.

(6) He also records the case of a multipara, aged 38 years, who had been operated upon for suspension of the uterus, following the removal, by the vagina of a subserous myoma. At the subsequent labor a prolapse of the cord was found and the child dead. The uterus was finally contracted upon the child, and rupture of that organ was imminent if attempts at version had been made. In view

of the condition present the abdomen was opened and the uterus amputated, the stump being left at the lower end of the womb. The patient died one and a half hours after the operation. On post-mortem examination the anterior wall of the uterus above the internal os was found adherent to the vagina. The right broad ligament was very greatly stretched, and contained a rupture that opened the pelvic cavity into the vagina. Through this rent a fatal hemorrhage had occurred.

(7) Strassmann [47] quotes the case of a patient, aged 35 years, operated upon by Dührssen, on September 5, 1894, on whom an intraperitoneal vaginal fixation and posterior kolpo-perineorrhaphy had been performed. Conception occurred three months later. At the time of labor, November 29, 1895, the child was found in a transverse position with presentation of the right shoulder and arm, and prolapse of the cord. The cervix was found drawn up above the promontory of the sacrum, and a diverticulum of the anterior uterine wall projected into the vagina. With great difficulty version was accomplished and the child extracted after incision of the os. There was severe postpartum hemorrhage, which was controlled by a compress and binder. Rupture occurred at the site of the cicatrix. The patient made a good recovery, as did also the child.

(8) Velde [48] records a case of labor subsequent to vaginofixation. The anterior vaginal fornix was drawn up very high, the uterus was sharply anteflexed, and the cervix displaced to the right. The child was transverse, and the uterus contracted so firmly that version was impossible. Porro's operation was performed and the uterus found to be ruptured. Both mother and child perished.

(9) Wertheim [49] records the case of a multipara who had been operated upon by Schauta according to Dührssen's method. At the time of labor the cervix was found to be high up in the pelvis, so that the entire hand had to be inserted into the pelvis in order to feel it. The anterior wall of the vagina was drawn up behind the symphysis, so that the scar of the previous operation could scarcely be felt. The anterior lip of the cervix was thickened, the posterior lip and posterior uterine wall were exceedingly thin. But little of the uterus remained within the pelvis. The fundus uteri was closely and firmly adherent to the vaginal wall. The fetus lay in a transverse position with the head to the right side. The labor-pains were strong, but the cervix dilated very slowly, the anterior wall of the uterus being drawn down above the symphysis, while the posterior wall became greatly distended, threatening rupture. Under deep anesthesia combined version was performed with great difficulty, and a foot drawn down. Three hours later a living child was delivered. Both mother and child

recovered. At a subsequent examination the attachment of the uterus to the anterior vaginal wall was found to be in no way weakened.

(10) Rühl[50] records the case of a patient in whom vaginofixation had been performed. At a subsequent labor podalic version was required on account of great cervical rigidity.

(11) He also relates the case of a multigravida whose previous labors had always been easy. Pregnancy occurred nine months after the operation of vaginal fixation for retroflexion and adherence of the uterus. During the gestation there was noted some difficulty in emptying the bladder. The labor-pains were good, but no progress was made, and when the patient was seen there was found marked stretching of the posterior uterine wall. The child had been dead for twenty-four hours. The head had entered the pelvis and was contained in a diverticulum of the uterine wall so firmly that it could not be dislodged without the use of an anesthetic. The cervix was drawn up so high that it was above the promontory of the sacrum, and could only be reached with great difficulty. Under deep anesthesia it was possible to dislodge the head and push it up. The os was like an iron ring and would admit four fingers only; efforts at further dilatation were not successful. With considerable difficulty version was performed, but even then the child could not be delivered. It was then determined to perforate the head, which was done with difficulty. The extraction of the child was exceedingly hard because of the thickened uterine tissue which formed a sort of girdle, so strong that it became necessary to incise it with a tenotome to permit of delivery. But little hemorrhage followed the incision. The uterus was finally emptied, the patient making a good recovery.

(12) Another patient, a tertipara, suffered from subinvolution which was first treated by curetting and then by fastening the womb to the vaginal wall. During the subsequent pregnancy the woman also suffered from difficulty in emptying her bladder. When labor came on, the cord prolapsed as soon as the membranes ruptured, the pains being very strong. Upon examination the cervix was found above the sacral promontory, the fetal head again being contained in a diverticulum of the uterine wall. It was impossible either to replace the cord or to make version. To effect delivery it was necessary to make an incision into the anterior lip of the cervix eight centimetres in length; no special hemorrhage followed. The incision was also extended laterally, and the tissues afterwards united with catgut sutures. It was then possible to extract the child with forceps, when the placenta was removed and the incision closed, as stated. The patient made a good recovery, and the uterus was subsequently found in a normal position.

(13) Dührssen[9] reports the case of a deutipara, 29 years of age, whose former births had been normal, and who was operated upon on April 25, 1894, an intraperitoneal vaginofixation having been performed. On February 18, 1895, she suffered from a miscarriage in the fourth month, due to a fall from a step; there was a prompt expulsion of the fetus and placenta after uterine tamponnade. On the 14th of the following December she was again in labor. The pains were strong, but the cervix would not dilate. The temperature and pulse were normal. The child presented in the first position of the occiput, the head resting deeply within the pelvis. The pains became severe and occurred every five minutes. The fetal heart-sounds ranged between 156 to 162. Internal examination finally showed the cervix dilated sufficiently to admit two fingers. The posterior lip was thickened greatly. Fetal life was threatened, as shown by an escape of meconium. Under ether the cervix was incised in front, behind, and to the right side, and the fetus extracted with forceps, living, but slightly asphyxiated. It died during the night. There was a placenta membranacea.

(5) The Percentages, Varieties, and Causes of the Abnormalities.

From the foregoing tabulation of cases it becomes very evident that the operations for anterior fixation of the uterus may result very disastrously in subsequent gestations and parturitions. Just what the percentage of abnormalities is has not as yet been decided, and it will require a vaster accumulation of facts before accurate information upon this matter can be obtained. After great difficulty in weeding out duplicate reports and verifying others, I have succeeded in grouping together in an accompanying table every reported case, normal and otherwise, of pregnancy following ventrofixation of the uterus, the operation most generally adopted. These now number 179 instances. Of this series, in 120 cases, or 67.03 per cent., a normal gestation was noted; in 111 cases, or 62.01 per cent., labor was absolutely normal; and in 68 cases, or 37.98 per cent., there was an absolutely normal condition throughout both gestation and labor. This leaves a total of 111 cases, or 62.01 per cent., in which some abnormality was noted, either in gestation, in labor, or in both. A close examination of the gestational disturbances and of the difficulties during parturition reveals the following interesting facts: In 16 cases, or 8.93 per cent., pain, more or less severe, was experienced in the line of the abdominal incision either during gestation or at the time of labor; in 4 cases, or 2 23 per cent., excessive vomiting was observed; in 10 cases, or 5.58 per cent., the cervix was situated far

up, at or above the pelvic brim, and directed posteriorly or to one or the other side; in 9 cases, or 5.02 per cent., uterine rupture was threatened at the time of labor; uterine inertia was noted five times, or in 2.79 per cent. of the cases of pregnancy, and 22.79 per cent. of the cases of dystocia; in 15 cases, or 8 37 per cent., the patients aborted, and in 10 cases, or 5.58 per cent., there were noted miscarriages or premature labors: troubles of various kinds during gestation were noted in 15 instances, or 8.37 per cent., and difficulties at parturition in 22 cases, or 12.29 per cent.; in 17 cases, or 9.49 per cent., the results of the pregnancy are not noted.

In investigating the features of the dystocia noted the following facts are worthy of mention: In 9 cases, or 5.02 per cent., there were abnormal presentations of the fetus. These were distributed as follows: Once, or in 0.55 per cent., the ear presented; twice, or in 1.11 per cent., the breech presented; and 6 times, or in 3.35 per cent., the child lay transversely; when compared to the usual frequency of trunk presentations, about ½ per cent., the present percentage is especially striking. Version was required in 9 instances, or 5.02 per cent. of the pregnancies and 40.9 per cent. of the difficult labors. Forceps were employed 11 times, or in 6.14 per cent. of the pregnancies, and in 50 per cent. of the cases of dystocia. In three instances, or 1.67 per cent. of the pregnancies, Cesarean section was performed, and in the same percentage of cases postpartum and puerperal hemorrhages were noted. The placenta was retained also three times (1.67 per cent.). The fetal mortality was 17.87 per cent., and the maternal 1.67 per cent. The latter is not altogether attributable to the operation, for one death was the result of chronic valvular disease of the heart. The true maternal mortaliy is, therefore, but 1.11 per cent. (two deaths).

An inquiry into the actual causes of the foregoing difficulties elicits the following results: The great frequency of the transverse presentations is undoubtedly due to an inability on the part of the uterus to properly expand in its long diameter. Its growth being impeded in this direction a compensatory dilatation takes place in the transverse and antero-posterior diameters. The fetal ellipse finds the greatest room in these diameters, and by its further growth and development contributes to the undue stretching and attenuation of the posterior uterine wall, the process at times being carried to the verge of rupture. This condition is especially well illustrated in the second of Miländer's cases. The stronger the bond of union between the anterior uterine wall and the abdominal parietes the greater is the probability of such an occurrence. If properly performed, hysteropexy should result, not in such a firm adherence between these

structures, but in the formation of a partially elastic band, which, while securing and maintaining an anterior position of the uterus, does not in any way interfere with its mobility. The suturing of the anterior wall of the uterus, which is earnestly advocated by some, is particularly to be deprecated, in that it defeats this very desirable object; a too firm fixation is thereby secured, and subsequent difficulties in gestation and parturition engendered. To prevent this complication Leopold[7] and others favor the employment of absorbable sutures, while others recommend the removal of the fixation-sutures within two weeks after the operation. If the fixation be properly performed, Fraipont[76] claims that the uterus does not increase especially in its posterior portion, but quite uniformly, so that, as might be expected, the fundus gradually detaches itself from the abdominal wall, or the adhesions—not including the muscular and fibrous structure of the uterus and abdominal wall, but serous and cellular tissue only—stretch to accommodate themselves to the increased tension. As the uterus undergoes involution it is restored to its original condition before the onset of the disease, that rendered the fixation obligatory. The pains and traction at the site of the incision, and the difficulties experienced in the mechanism of the labor, are the direct result of dragging upon too firm adhesions, which a proper technique would have avoided.

The abnormally high situation of the cervix uteri, at times altogether above the pelvic brim, is another element in the dystocia, the direct outcome of an improper technique in the performance of the hysteropexy. The object of the latter operation is not to convert a pathologic retrodisplacement into an equally pathologic anteflexion, but merely to restore and retain the fundus uteri in its normal position of moderate anteflexion. This can only be accomplished by fixing the uterus at a point sufficiently low to prevent undue upward traction upon the cervico-vaginal attachments, but not so low as to cause a decided bending at the internal os, or a marked anteversion of the organ. Leopold[7] advises fixation at a point not more than half an inch above the upper border of the symphysis as most conducive to this end. Undoubtedly it is true that the lower the fixation the greater the percentages of difficulties in subsequent gestations,—a statement the truth of which is substantiated by an inquiry into the relative percentages of dystocia following the two operations of ventral and vaginal fixation. Noble[40] states that over 25 per cent. of pregnancies subsequent to the operations of Dührssen and Mackenrodt abort, and Dührssen[77] himself says that of patients treated for retrodisplacement by means of pessaries 16.6 per cent. abort, while of those treated by fixation of the uterus to the vagina 27.2 per cent.

abort. The very large number of difficult labors reported after the operation of vaginofixation is also a strong proof of the accuracy of this assertion. The abortion in these cases is the result of a duplex cause,—the reflex irritation produced by the fixation-sutures and adhesions upon the developing organ, and the actual mechanical interference with its growth. In those cases that advance to term the abnormal direction of the uterine axis—back towards the sacral promontory—not only renders the uterine pains ineffective, but also prevents the proper retraction of the longitudinal muscular fibres of the cervix, so that dilatation does not proceed normally, the labor thereby being mechanically obstructed by this condition as well as by the immensely hypertrophied anterior uterine wall. In the vaginally fixated cases to the foregoing abnormalities must be added a condition of marked cervical rigidity, the result of the mass of cicatricial tissue that is formed about the upper portion of the cervix whereby its dilatation is absolutely prevented.

One other danger following the imperfect performance of anterior uterine fixation is an actual mechanical interference—through the agency of the adhesions—with uterine contraction, resulting during labor in a degree of uterine inertia, and after labor favoring the onset of postpartum and puerperal hemorrhages. This condition was noted in a number of the reported cases.

(6) Conclusions.

The following deductions seem justifiable in the light of the foregoing reflections :

(1) From an obstetric, as well as gynecologic, point of view the operation of ventrofixation for the cure of uterine displacement is the most desirable in its results.

(2) If improperly performed, any of the operations of anterior fixation of the uterus may exert a deleterious effect upon subsequent pregnancies.

(3) This evil influence increases in direct proportion to the low implantation of the fixation-sutures,—hence, the vaginal operations are especially dangerous.

(4) The abnormal conditions noted include pain and traction at the site of the incision, premature termination of the gestation, difficulties in micturition, excessive nausea and vomiting, abnormal presentations of the fetus, mechanical obstruction to labor, uterine inertia, cervical rigidity, uterine rupture, placental anomalies, and postpartum and puerperal hemorrhages.

(5) Over half of the subsequent gestations and labors offer some abnormal condition.

Operator.	No. of Pregnancies.	Normal Pregnancies.	Normal Labors.	Abortions.	Miscarriages and Premature Labors.	Gestational Disturbances.	Dystocia.	Unfinished Pregnancies.
1 Bar.[51]	1	1	1					
2 Baudoin.[52]	2	2	2					
3 Bion.[53]	3	2	2					1
4 Boldt.[54]	3	3	3					
5 Chaput.[51]	1	1	1					
6 Collette.[38]	1	1					1, inertia; forceps.	
7 Condamin.[55]	1	1	1					
8 Currier.[56]	1	1	1					
9 Edebohls.[11]	8	4	4	1, induced.		2 mat deat's: 1 from sepsis, 1 from valvu heart-disease.		
10 Ferrier.[57]	1	1	1					
11 Flaischlein.[43]	2						1, transverse: version.	1
12 Fraipont.[27]	1				1 at 7½ months.			
13 Frommel.[33]	1	1					1, breech: extraction by feet.	
14 Gallet.[37]	3	1	1			2, pains and traction.	1, forceps; 1, post-partum hemorrhage.	
15 Goodwin.[32]	1	1					1, breech: spontaneous delivery.	
16 Gottschalk.[42]	3	1	1	2				
17 Goubaroff.[35]	1	1					1, transverse: Cesarean section.	
18 Gouilloud.[58]	3	3	3					
19 Hennig.[5]	1	1	1					
20 Howitz & Meyer.[59]	2	2	2					
21 Jacobs.[60]	8	8	8					
22 Jacobs.[29]	1		1			1, pains and traction.		
23 Jeannel.[51]	1	1	1					
24 Kaltenbach.[61]	1	1	1					
25 Kelly.[41]	6	5	6			1, pains and traction.		
26 Kleinwächter.[62]	1	1	1					1
27 Klotz [63]	3	2	2					
28 Kümmell.[64]	1	1	1					1
29 Küstner.[23]	2				2 at 4th month.			
30 Lamort.[65]	1	1	1					
31 Leon.[30]	5	3	3	2, 1st mo.				
32 Leopold.[66]	2	2	2					
33 Löhlein.[31]	2		1			2, pains and traction.	1, forceps: uterine inertia.	
34 Mackenrodt.[36]	1	1					1, version.	
35 Michaelis.[20]	1	1					1, transverse: version; 1, puerperal hemorrhage.	
36 Miländer.[39]	3	3					2, transverse: version; Cesarean section; 1, retained placenta.	
37 Mouratow.[67]	1	1	1					
38 Noble.[46]	1	1					1, Cesarean section.	
39 Noble.[46]	45	25	25	5	5	3	3,	7
40 Norris.[45]	1	1					1, cephalic version; 1, forceps.	
41 Olshausen.[15]	3	2	8			1, pain; abor. threatened.	1, ear: version.	
42 Pinard.[51]	1	1	1					
43 Poltowicz.[34]	3	2	2	1, 2d mo.				
44 Pozzi.[68]	1	1	1					
45 Routier.[69]	1	1	1					
46 Routier.[70]	1	1	1					
47 Sänger.[25]	5	3	3	1			1, version.	
48 Sänger.[28]	20	13	13	2, 3d and 5th mos.	1 at 8th month.			4
49 Sänger.[71]	1	1	1					
50 Sinclair.[72]	4	1	1	1				2
51 Slaviansky.[51]	1	1	1					
52 Sperling.[73]	3	2	1					1
53 Strassmann.[40]	2	2					2, forceps: 1, post-partum hemorrhage.	
54 Vlaccos.[74]	1	1	1					
55 Von Herff.[75]	1	1	1					
56 Von Winiwarter.[26]	3		2		1 at 7½ months.	3, pains and traction.		
57 Wegener.[44]	1	1					1, transverse: cephalic version; forceps.	
	179	120=67.03%	111=62.01%	15=8.32%	10=5.58%	15=8.37%.	22=12.29%.	17=9.49%

(6) About 14 per cent. of the women suffer from abortions or miscarriages, and over 12 per cent. show dystocia in varying degrees, after hysteropexy, while over 27 per cent. abort after vaginofixation.

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THE BLOOD IN CHOREA.[1]

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The following study of the occurrence of anemia in Sydenham's chorea and its causative influence is based upon thirty-six cases. Habit spasm, organic, and hysteric choreas are not considered. The patients studied were in attendance at the clinics of Drs. Weir Mitchell, Wharton Sinkler, and Morris J. Lewis, at the Infirmary for Nervous Diseases. The blood examinations were made by my friend, Dr. James Ely Talley. The instruments used were Zeisse's hemacytometer and Fleischl's hemometer. The white corpuscles were not counted. The majority of the patients were the children of fairly prosperous working people. None were paupers. The severity of the cases varied greatly. So far as known none of the patients died. The majority recovered; a few were lost to view. As a whole, the cases give a very fair picture of the disease.

Case I.—Female, aged 6 years; second attack; never had rheumatism; the movements began after reciting a "Christmas piece;" they are general and quite severe; there is a faint systolic murmur heard only at the apex. First blood count, thirty-five days after onset, hemoglobin, 90 per cent.; red blood-corpuscles, 6,400,000. The second, three months later, hemoglobin, 90 per cent.; red blood-corpuscles, 6,240,000.

Case II.—Female, aged 6 years; fourth attack; never had rheumatism; the movements are not very severe and affect mainly the right side; there is marked weakness of the right arm. In the first attack the heart's action was rhythmic, the first sound clear, the second somewhat accentuated. In the third attack the apex-beat was one and a

[1] Read at the meeting of the Philadelphia County Medical Society, October 14, 1896.

half inches to the right of the nipple. There was a high-pitched systolic murmur at the apex feebly conveyed to the axilla, a loud, basic murmur and a venous hum in the neck. In the fourth attack there was a roaring, systolic, basic murmur loudest at left base, a presystolic murmur on exertion, a soft systolic apical murmur and split second sound and a venous hum in the neck. Blood at end of second attack, hemoglobin, 85 per cent.; red blood-corpuscles, 4,600,000. During third attack, hemoglobin, 85 per cent.; red blood-corpuscles, 5,496,000. During fourth attack, hemoglobin, 45 per cent.; red blood-corpuscles, 3,450,000. None of the attacks were severe, and in the last the heart condition was the serious matter. The patient was lost sight of. The first attack began in September, 1892, the fourth in April, 1896.

Case III.—Female, aged 7 years; sixth attack; has never had rheumatism; supposed exciting cause, a whipping by her father; patient is very emotional; the movements are very severe. During the second and fifth attacks there was a loud systolic murmur heard over the body of the heart and a venous hum in the neck. During the sixth attack, hemoglobin, 65 per cent.; red blood-corpuscles, 4,800,000. It is probable that there were not six distinct attacks; probable that there were exacerbations rather than recurrences.

Case IV.—Female, aged 9 years; second attack; one brother has valvular heart-disease and another had rheumatism. Eight months before first attack of chorea the patient had rheumatic pains. Supposed cause of the present attack, a fall on the ice; she looks delicate. The movements are general and not very severe. Blood two weeks after the onset, hemoglobin, 75 per cent.; red blood-corpuscles, 4,520,000.

Case V.—Female, aged 6 years; first attack; one sister has had chorea; the patient has been pale and thin for several years; the movements are general and not severe; supposed cause, imitation; the heart is normal. Blood two weeks after onset, hemoglobin, 60 per cent.; red blood-corpuscles, 3,850,000.

Case VI.—Female, aged 12 years; third attack; the patient has had "brain fever and measles," and has always been delicate; the movements are general and not very severe. At the beginning the heart was normal, but some months later there was a presystolic apical murmur and a loud systolic murmur at the left base. Four months after the onset and two months before movements ceased, hemoglobin, 98 per cent.; red blood-corpuscles, 6,240,000.

Case VII.—Female, aged 14 years; first attack; mother died of phthisis. She looks pale; there is a soft systolic murmur at the base; the attack lasted six months. Examination of the blood

shortly before recovery gave, hemoglobin, 95 per cent.; red blood-corpuscles, 4,560,000.

Case VIII.—Female, aged 13 years; first attack; father a drunkard; the patient has had chicken-pox, measles, and whooping-cough; the cheeks are flushed, but yet pale; the movements affect mainly the left arm and leg; there is a left basic systolic murmur and venous hum in neck; no apical murmur is heard while standing, but while lying a presystolic murmur is heard; five weeks after the onset and two weeks before the last visit, hemoglobin, 100 per cent.; red blood-corpuscles, 4,560,000.

Case IX.—Male, aged 8 years; first attack; patient has always been robust; the movements are general and so severe that he cannot walk; the pulse is very rapid; there is a left basic systolic murmur and an apex systolic murmur transmitted to the axilla; three months after the onset and two months before recovery, hemoglobin, 80 per cent.; red blood-corpuscles, 4,608,000.

Case X.—Male, aged 8 years; first attack; patient's father has had rheumatism, and one sister, who died of phthisis, chorea; the patient was a puny infant and always delicate; she is pale; there is a marked mitral regurgitant murmur; ten weeks after the onset hemoglobin, 85 per cent.; red blood-corpuscles, 3,560,000.

Case XI.—Female, aged 9 years; third attack; patient's mother has had chorea; patient has always had good health; face pale; in the first attack there was a loud, rough, long apex systolic murmur transmitted to the axilla; in the third attack no murmur was present; two weeks after the onset of the third attack, hemoglobin, 95 per cent.; red blood-corpuscles, 6,240,000.

Case XII.—Female, aged 7 years; first attack; patient has had measles and whooping-cough; two days before the twitching began the patient was much scared by a dream; the movements are not severe and are confined to the left arm and leg, which are also weak; the heart is normal; six weeks after the onset and two weeks before recovery, hemoglobin, 90 per cent.; red blood-corpuscles, 6,080,000.

Case XIII.—Female, aged 8 years; fourth attack; the movements are very slight; in the first attack there was a basic systolic murmur; there is no record of the heart condition in the fourth attack; hemoglobin, 90 per cent.; red blood-corpuscles, 4,500,000.

Case XIV.—Female, aged 4½ years; first attack; the patient had marasmus in infancy and has always been sickly; she is very small for her age; the movements are general, and there is much weakness of the right arm and leg; the heart is normal; one month after the onset, hemoglobin, 85 per cent.; red blood-corpuscles 4,000,000.

Case XV.—Female, aged 11 years; third attack; previous health good; has had measles and whooping-cough; the movements are general and not very severe; there is a soft systolic murmur heard over the body of the heart and a venous hum in the neck; three weeks after the onset, hemoglobin, 80 per cent.; red blood-corpuscles, 5,087,000.

Case XVI.—Female, aged 12 years; fifth attack; supposed cause, fright; the twitching began the day after her father died; the movements are general and violent; there is a loud systolic murmur at base and apex heard also in the axilla; six weeks after the onset, hemoglobin, 90 per cent.; red blood-corpuscles, 4,896,000.

Case XVII.—Female, aged 11 years; first attack; previous health good; the patient has had measles and whooping-cough; the movements are confined to the right side and are not very severe; the heart is normal; five weeks after the onset, hemoglobin, 90 per cent.; red blood-corpuscles, 4,900,000.

Case XVIII.—Female, aged 10 years; second attack; marantic in infancy; has had measles and pneumonia; the heart is normal; several weeks after onset, hemoglobin, 85 per cent.; red blood-corpuscles, 5,328,000.

Case XIX.—Female, aged 12 years; fourth attack; heart normal; never had rheumatism; movements general and of great severity; two weeks after onset, hemoglobin, 95 per cent.; red blood-corpuscles, 4,200,000.

Case XX.—Female, aged 16 years; mill hand; previous health good; has had measles, diphtheria, and scarlet fever; heart normal; the movements are not very severe; hemoglobin, 100 per cent.; red blood-corpuscles, 6,448.000.

Case XXI.—Male, aged 12 years; first attack; has had measles and croup; inflammatory rheumatism three months before present trouble; supposed cause shock on account of the death of his grandmother; face pale; heart normal; the movements are worse on the left side and are quite severe; there is weakness of the left leg; one week after the onset, hemoglobin, 85 per cent.; red blood-corpuscles, 4,848,000.

Case XXII.—Male, aged 9 years; first attack; one sister had chorea and another rheumatism; complexion pale; the movements are not very severe and affect mainly the right hand; the heart is somewhat irregular and the sounds not very strong; no murmur is heard; two weeks after onset, hemoglobin, 78 per cent.; red blood-corpuscles, 5,248,000.

Case XXIII.—Male, aged 5 years; first attack; previous health good; general appearance good; movements not very severe; heart

normal; six weeks after onset, hemoglobin, 85 per cent.; red blood-corpuscles, 5,200,000.

Case XXIV.—Male, aged 14 years. Patient has had epilepsy for ten years; scarlet fever at 7; he has had chorea with intermission for three years; general appearance epileptic; the movements are general, not extreme, and more marked on the right side; examination of the heart negative; hemoglobin, 85 per cent.; red blood-corpuscles, 5,024,000.

Case XXV.—Female, aged 12 years; first attack; a cousin has had chorea; the patient has had measles, chicken-pox, and scarlet fever, and repeated attacks of tonsillitis; supposed cause of chorea, imitation; general appearance good; the movements are general and not severe; a mitral regurgitant murmur is present. One week after onset, hemoglobin, 80 per cent.; red blood corpuscles, 5,104,000.

Case XXVI.—Female, aged 11 years; fourth attack; patient has had diphtheria and been epileptic for some time; general appearance epileptic; early in the chorea a basic murmur was present, which later disappeared; the movements are general and not severe; there is great weakness of the legs. Seven months after the onset, and when there were almost no movements, hemoglobin, 60 per cent.; red blood-corpuscles, 3,600,000; in a short time the movements began again.

Case XXVII.—Female, aged 24 years; second attack; first attack two and a half years ago; married six months; menstruation was normal until three months ago, since which time it has ceased; she is probably pregnant; Montgomery's sign is present; face pale; the examination of the heart is negative; the movements are general and not severe; seven weeks after the onset hemoglobin, 65 per cent.; red blood-corpuscles, 3,460,000; she did well under treatment, but was lost sight of in a few weeks.

Case XXVIII.—Female, aged 12 years; fourth attack; one sister has had chorea; general appearance good; the movements are general; there is slight cardiac arhythmia and a booming first sound, but no murmur; six weeks after the onset, hemoglobin, 70 per cent.; red blood-corpuscles, 4,000,000.

Case XXIX.—Female, aged 10 years; second attack; aunt died of chorea with heart-disease when 14 years old; the patient has had the diseases of childhood; the movements were at first confined to the muscles of the trunk, and consisted of simultaneous contractions of the abdominal and back muscles, recurring at short intervals; later muscular twitching about the eyes, nose, and mouth appeared; a mitral regurgitant murmur and a venous hum are present; ten

months after the onset, hemoglobin 90 per cent.; red blood-corpuscles, 4,750,000. This case should strictly be classed among the habit choreas.

Case XXX.—Female, aged 10 years; third attack; began immediately after seeing an acrobatic performance; the movements are general, but worse on the left side; in the second attack the heart was normal; in the third there was a systolic murmur at the apex and transmitted to the axilla; a few days after the onset, hemoglobin, 85 per cent.; red blood-corpuscles, 4,144,000.

Case XXXI.—Male, aged 12 years; first attack; patient has had chicken-pox; the movements are general; there is a loud basic systolic murmur and venous hum in the neck; five weeks after the onset, hemoglobin, 80 per cent.; red blood-corpuscles, 4,464,000.

Case XXXII.—Male, aged 15 years; mill hand; general appearance good, but the face is pale; the movements are general; there is a systolic murmur heard over the body of the heart, fainter at the apex, and not transmitted; three weeks after the onset, hemoglobin, 85 per cent.; red blood-corpuscles, 4,688,000.

Case XXXIII.—Female, aged 7½ years; first attack; patient has had the common diseases of childhood; supposed cause of the chorea, worry at school; robust looking; the heart-sounds are indistinct and muffled; no venous hum; the movements are not very marked and involve mainly the right side; three months after the onset, hemoglobin, 77 per cent.; red blood-corpuscles, 3,816,000,

Case XXXIV.—Male, aged 13 years; second attack; patient has had scarlet fever; supposed cause of chorea worry at school and punishment at home; face pale; the movements are general; in the first attack the heart's action was rhythmic and the sounds clear; there is no record of the condition of the heart in the second attack; four weeks after the onset, hemoglobin, 65 per cent.; red blood-corpuscles, 4,112,000.

Case XXXV.—Male, aged 13 years; first attack; mill hand; previous health good; pale and thin; movements general; four weeks after onset, hemoglobin, 78 per cent.; red blood-corpuscles, 3,696,000.

Case XXXVI.—Male, aged 11 years; fourth attack; pale; on first visit loud mitral regurgitant murmur; the movements are general; distinct weakness of left arm and leg; two weeks after the onset, hemoglobin, 77 per cent.; red blood-corpuscles, 4,096,000.

Summary.—Anemia is sometimes stated to be a common cause of chorea. Most often the patient is assumed to be anemic because he is pale and scant of fat. The assumption is hasty, for simple pallor may exist with plethora and a ruddy face in chlorosis. Many

choreic children are, it is true, pale. Their faces are characteristic, sometimes pathognomonic, pale, thin-skinned, mapped out with blue veins, the expression wistful, sensitive, precocious. But this face does not prove anemia, gives no certain indication of the condition of the blood. Examination alone can reveal that.

To prove that anemia is a cause of chorea, either predisposing or exciting, several things must be proven. It must be proven to occur in a proportion of cases larger than can be accounted for by coincidence. It must be shown to be present before the chorea develops, because if it appears only during the course of the disease it certainly is not the cause, but is either secondary, or both the anemia and the chorea are due to one common cause. The case would be greatly strengthened if chorea were a frequent complication of chlorosis or any of the so-called essential or secondary anemias. But it is not. If ordinarily there is not marked anemia before or even during the course of the attack it certainly cannot be a common cause.

An examination of the foregoing brief abstracts of cases gives several interesting conclusions. The hemoglobin estimation and corpuscle count were at the theoretic normal in only two cases (VIII and XX). In none was there extreme anemia. In the most severe (Case II) the hemoglobin was 45 per cent., the red blood-corpuscles, 3,450,000. But the patient had had other attacks with a practically normal corpuscle count and 85 per cent. of hemoglobin, a fall below the theoretic normal, not uncommon in city children. Further, the attack of chorea was slight and the heart-disease the serious condition. I am compelled to believe that the anemia bore no causal relation to the chorea. The next most severe case (XXVI) also had epilepsy. The chorea was not severe, indeed, was very slight, but persisted for months. There is great probability that the blood condition was due to the epilepsy, the bromide treatment, or both. It is interesting that in another case (XXIV) complicated by epilepsy, and in which the chorea had lasted intermittently for three years, hemoglobin was 85 per cent. and red blood-corpuscles, 5,024,000. In the third worst case (XXVII) there was the complication of probable pregnancy, and again the attack was not severe. It is noteworthy that in the three most anemic cases the chorea was not serious. In one very bad uncomplicated case (III) which had had five previous attacks the hemoglobin was 65 per cent. and the red blood-corpuscles, 4,800,000, and in another, hemoglobin was 60 per cent. and red blood-corpuscles, 3,850,000. In Case XXVIII hemoglobin was 70 per cent. and red blood-corpuscles, 4,000,000, in Case XXXIV, hemoglobin was 65 per cent. and red blood-corpuscles, 4,112,000. In

twenty-four cases the hemoglobin reached 80 per cent. or over and the corpuscles 4,000,000 or more. In twenty-nine cases the hemoglobin reached 75 per cent. or over. In no case was there extreme corpuscular deficiency, the lowest count (Case II) being 3,455,000.

From the above data I draw the following conclusions: The blood is rarely absolutely normal in amount of coloring matter and number of red corpuscles during an attack of chorea. There is usually a moderate diminution in the hemoglobin and a relatively still smaller decrease in the number of red corpuscles. The anemia is therefore chlorotic in type. There is no relation between the severity of the chorea and the severity of the anemia When the anemia is severe there is usually some complication competent to explain it. All things considered, we feel justified in believing that anemia is not an immediate, direct, exciting cause of chorea, and but infrequently a predisposiug cause. In the great mass of choreas with very moderate anemia it most probably is a result of the chorea, a secondary condition. As to the mechanism of its production we know no more than we do of the method of action of other profound functional nervous disturbances, for example, emotional shock in reducing the blood count,—namely, nothing. In the cases caused by bacterial poisoning, which so far have not been proven to be numerous, it is possible that the anemia is toxic.

There is one form of anemia the existence of which cannot be shown by any means at present at clinical command,—namely, the condition in which there is an equal decrease in all the elements of the blood, solid and liquid, a quantitative anemia. This may exist and be the cause of some cases of chorea, but it is not susceptible of proof. Against the probability of such causation is the fact that hemorrhage due, for example, to trauma (which, of course, causes a temporary quantitative anemia) is not followed by chorea, and the improbability that a quantitative anemia due to congenital or internal causes would be cured by rest in bed for a few weeks, regulation of diet, and the administration of a small amount of arsenic, a method of treatment of chorea which so often is followed by recovery.

A Lemon used as a Pessary.

Bérard reports an instance where the patient employed a lemon as a pessary for twenty-two years. She preferred the lemon because it was easily introduced and removed, and also because it did not cause any odor. Her trouble was uterine prolapse with cystocele and rectocele.—*L'Abeille médicale.*

AMENORRHEA: SEA VOYAGE AS AN ETIOLOGIC FACTOR IN ITS PRODUCTION, AND ITS TREATMENT.

By Homer C. Bloom, M.D.,

Philadelphia,

Instructor in Gynecology in the Philadelphia Polyclinic; Out-Door Surgeon to the Gynécéan Hospital.

In all gynecologic services one is impressed with the large number of recent emigrants who call to consult relative to suppression of the menses and the attendant ill health.

In looking carefully into the subject it is safe to make the statement, that probably not less than 33 per cent. of women emigrants under 30 years of age suffer from suppressed menstruation.

In making some inquiry as to whether a sea voyage has the same effect on all classes, vague as the information is, I am led to believe it is a factor in the causation of amenorrhea, especially in neurotic subjects; and this is demonstrated by a personal experience in two cases, both being excessively nervous, and in each case there was *suppressio mensium* for months.

The history obtained in most of these cases, so far as the menses are concerned, shows normal regular menstruation previous to sailing, the women may have had their period for the last time on board the vessel. The time elapsing since the last menstruation varies in individuals, for the reason that the absence of this function is viewed differently by the laity. Some, alarmed at its absence for two or three periods, consult early; others, if their health is not seriously affected, often wait for months, or until other symptoms call their attention to its absence. The patients are usually anemic, or chlorotic, or both, complain of being easily fatigued upon the slightest exertion, suffer from lumbo-sacral pains and discomfort about the back and spine, this being especially marked at that time of the month at which they had previously had their menstruation.

Many of these cases have abdominal distention, and so great is this in some cases that not infrequently girls have been innocently charged with being pregnant. Indeed, I have known two instances in which they were requested to leave service on this account.

Obstinate constipation is also a common symptom.

It goes without saying in a condition like this, in which there is an absence of a function the existence of which is dependent upon the nervous system, that the most pronounced symptoms are nervous;

and these alone prove that the true etiology of *suppressio mensium* is largely psychical and neurotic.

The intensity of these vasomotor symptoms is not unlike that which follows the abrupt or surgical suppression of this periodic function. The most prominent manifestations are flushes, chilly and creepy sensations, apprehension, fear, and often true melancholia.

There is no age, as far as the menstrual life is concerned, exempt from the conditions which cause suppression; yet we find it more common among young women under 30 years of age.

It is for the purpose of calling attention to the serious inroads upon the health of these patients that this paper is written.

It would, indeed, be a small matter, or one of but little moment, this temporary absence of the menses, if this was all; but there is no class of cases which suffers more in health than those women who have from some nervous shock been deprived of this function, the presence of which means the fulfilment of all those conditions that are necessary for their normal equilibrium.

In any but a physiologic cessation of the menses there is always a condition which is abnormal, and one which cannot be considered in any other light than pathologic.

In a number of cases I have seen phthisis follow amenorrhea, the result of a sea voyage, and in not a single case could I get a history of an inherited tendency, but, upon the other hand, their congeners were long-lived and healthy, with no trace of a tubercular dyscrasia.

The question that naturally pushes itself to the front is, Why a sea voyage should have such an enervating or debilitating effect upon the condition of women as to influence menstruation? The answer depends largely upon how we view this function.

Crude as is our knowledge of this function, there are many conditions that go to prove that it is more than likely the result of a nervous stimulus yet unknown. The fact of *suppressio mensium* following a sea voyage appears to add to the evidence already existing of the nerve origin of menstruation.

When we consider the conditions that take place in the sudden change from land to sea; the motion of the vessel which is productive of a nervous impression that gives rise to sea-sickness; and the mode of life; all of these combine to produce a nervous strain or exhaustion, the psychic effect which in certain individuals influences physiologic functions, none of which are more sympathetic than that of menstruation. And remembering how grief, joy, shock, and sudden news stop this function at its height with the same ease as a pair of artery-forceps stops the flow of blood from a bleed-

ing vessel, we can then realize why certain women from the influences of a sea voyage become the victims of *suppressio mensium.*

In treating a condition like this there are no hard or fast lines that can be laid down to govern all cases; and yet there are well-defined therapeutic measures that are constant and applicable to almost all cases. In the management we are confronted at the very start with the impoverished condition of the blood. There is not only an anemia to contend with in the larger number of cases, but anemia plus chlorosis; the latter may be secondary, but, nevertheless, its presence alters largely the treatment of uncomplicated anemia.

The first consideration in the treatment of this condition is not only the blood *per se*, but the causes that bring about its impoverished condition. Iron is lauded as the sheet-anchor in the treatment of these conditions. My experience does not coincide with this. Upon the other hand, simple ferruginous preparations have had but little effect in my hands in the treatment of this form of amenorrhea. The insolubility of a large number of inorganic preparations of iron at once condemns them for routine administration. While ferruginous preparations are important and we cannot succeed without them, they must be given in such a manner or form as to be readily soluble, as well as combined with other therapeutic agents that will reinforce their efficiency, and contribute to their solubility and assimilation.

A combination that I have successfully prescribed is peptonate of iron with manganese. The latter agent not only assists the iron by an action yet unknown, but increases the ease of assimilation of both drugs. There is about oxalic acid some subtle influence for good in many of these cases, the explanation of which I know nothing; but practical results show that when it is combined with the iron and manganese in the following formula, it does more good than any other single prescription:

℞ Oxalic acid . . . . . grs. iv.
Peptonate of iron . . . . . grs. xcvi.
Peptonate of manganese . . . . . grs clx.
Elixir of curacoa . . . . . f℥ii.
Aqua . . . . . f℥vi.—M.

Sig.—A tablespoonful in a glass of milk or in a wineglass of sherry wine three times a day.

This simple plan, with a well-regulated diet of eggs, fish, meats, oysters, milk, and vegetables that are rich in organic iron may be all that is required. So profoundly affected are many of these cases not only from the anemic condition, but from the neurotic element, that measures other than those mentioned may have to be instituted.

Then the dietetic treatment along with other measures will have to be followed.

In all cases of anemia the impoverished and watery condition of the blood acts unfavorably upon the digestive secretions and diminishes their organic elements. The secretions being unable to digest the food, it is necessary to reinforce them by the use of artificially prepared ferments, or to give predigested food, making use of pancreatin in the preparation of animal food, and diastase or malt extracts for the predigestion of amylaceous food. With this as the basis for the easiest and most easily assimilated diet I will pass on to the consideration of further therapeutic measures.

In conjunction with the prescription mentioned I have found *nuclein* in three-grain doses four times a day act very well upon the nervous element of this condition.

In other cases nothing does so much good as strychnine in full and increasing doses, commencing with one-twentieth of a grain three times a day and cautiously increasing the dose. It is surprising how much of this alkaloid some of these patients can tolerate without systemic symptoms.

The following combination has given very good results in a number of these cases :

℞ Strychnia sulph. . . . . grs. ii.
Peptonate of iron . . . . . grs. cxx.
Oxalic acid, C. P. . . . . grs. x.
Lactate of manganese . . . . . grs. cxx.
Colocynth comp. cer. . . . . grs. xxx.—M.

Ft. capsules No. 60.
Sig.—One capsule an hour after each meal.

In not a few cases arsenic in some form is demanded, and nothing else will take its place.

A most valuable preparation in this connection is arsenate of manganese. Bone-marrow possesses value in combination with strychnine, as has been attested in a number of cases. In this class of patients the bowels must be regulated. This is absolutely one of the most important adjuncts in the management of the condition.

Activity of secretion being necessary, nothing does so much good as mercurials every fortnight. Salines as a routine practice for simple purgatives are better than any other class of cathartics.

It is self-evident that all surroundings, both hygienic and dietetic, that are conducive to health, comfort, and the minimum amount of nervous friction, will increase proportionately the measure of success.

SOCIETY REPORTS.

PHILADELPHIA PATHOLOGICAL SOCIETY.

Meeting June 25, 1896.

TRICUSPID, MITRAL, AND AORTIC STENOSIS.

BY J. D. STEELE, M.D.

THIS specimen was placed at my disposal by my colleague, Dr. Sailer, who performed the autopsy.

Olga S., aged 39 years, a native of America; single; a teacher by profession. Father was insane, and died of phthisis. Mother died at 32 years of cholera. One uncle was insane. The patient contracted acute articular rheumatism in 1890, and was bedridden from this attack for three years. She had had a slight attack of rheumatism in early life. In 1893 she developed symptoms of paranoia and was committed to the insane department of the Philadelphia Hospital, where she remained until her death, on June 15, 1896. Cardiac symptoms seem to date from the rheumatism acquired in 1890. She had repeated attacks of loss of compensation, one of which proved fatal.

Autopsy (June 16, 1896).—Abdomen, pleura, and pericardium contained large quantities of clear blood-stained fluid. In the latter there were also a few old adhesions.

Heart.—Left ventricle ten centimetres long and six broad. Right ventricle same dimensions. Right auricle tremendously dilated. Tricuspid orifice does not admit the tip of little finger. Upon the anterior surface are a few marantic clots firmly adherent to the auricular wall. The three leaflets of the valve are united, leaving a triangular orifice seven by five millimetres. The three leaflets thus united form a funnel-shaped sac with the orifice at the bottom projecting into right ventricle. The edges of the valve are studded with small recent vegetations. The wall of the right auricle measures three millimetres in thickness; right ventricle seven millimetres. The pulmonic leaflets show sclerotic bases, and are slightly adherent at their edges. Intima of pulmonary artery is much congested. The left ventricle is greatly dilated. Mitral valve is button-holed, and does not admit the tip of little finger. The upper surface of valve is rough and shows a few minute vegetations. Left auricle three millimetres

in thickness; left ventricle fifteen millimetres. Aortic valve agglutinated by adhesions of the leaflets into a dense, sclerotic ring, forming a narrow slit fifteen millimetres in circumference, into which the tip of little finger cannot be passed.

There are a few patches of atheroma just above the attachments of the aortic valve. Myocardium dense and sclerotic. Coronary arteries are slightly sclerotic.

Lungs show acute emphysema, much edema, and hypostatic congestion. Spleen is seat of cyanotic induration. Kidneys show chronic interstitial inflammation, and a pyramidal scar with base towards periphery. Stomach reveals chronic inflammation and fibrous stenosis of pylorus. The brain is apparently normal.

It does not seem to me that the changes in the heart are the result of a fetal endocarditis, for the following reasons:

(1) The age of the patient.

(2) The fact that she was of good development, and not undersized, as occurs in so many cases of congenital heart-disease.

(3) The pericardial adhesions suggest the occurrence of inflammation around the heart at some period.

(4) The pyramidal scar in the kidney is probably the remains of an infarct that might have readily resulted from endocarditis in adult life.

(5) The absence of any defect in the heart's development.

(6) The fact that the cardiac symptoms, if they did not originate in the attack of rheumatism mentioned, certainly were much more severe after its occurrence.

Lesions of the right side of the heart, acquired in postnatal life, can no longer be considered extremely rare. Sansom, in his "Diseases of the Heart and Aorta," states that in his experience the right side of the heart is affected in quite 50 per cent. of all acute inflammations of the endocardium, and in almost every case of severe endopericarditis. This statement is supported by Byron Bramwell in his article in the *American Journal of the Medical Sciences*, published in 1886. They both state that the right heart is subjected, however, to so much less strain than the left, that resolution much oftener takes place, and so there is less likelihood of the formation of permanent lesions. In the present case, whatever was the time of occurrence of the attack of endocarditis giving rise to such extensive changes, an explanation may be sought for the fact that the acute inflammation, existing at the time of death, is more marked on the right side than on the left. The reason seems evident. The extreme difficulty of getting blood through the initial orifice must have thrown tremendous strain upon the right heart, and the amount of work demanded by

the respective sides must have been the reverse of that required in health. Therefore the right side became the point of less resistance and more liable to infection. This specimen is more interesting in the degree of stenosis than in the number of valves affected. In eighty-six cases collected from literature, in which the right heart was affected, 30 or 35 per cent. showed disease of the tricuspid, mitral, and aortic valves. In seven of these there were pericardial adhesions. This proportion is rather larger than Osler gives, which is 18 per cent. in 114 cases. In the series mentioned the greatest degree of stenosis occurs in a case reported by Simpson in the *British Medical Journal* for 1868, where the tricuspid valve admitted one finger to the first joint and the mitral measured six by three millimetres. All authorities unite in the statement that the right heart is diseased much oftener in women than in men.

TUBERCULOUS PERICARDITIS.

BY J. D. STEELE, M.D.

Autopsy.—The body of a somewhat emaciated man. Pericardium is completely obliterated. The layers are much thickened, measuring together with exudate between them four millimetres. The surface of the two layers, when stripped apart, are seen to be studded with small, round, opaque bodies about one millimetre in diameter, and of a whitish-gray color. These bodies are also scattered through the connective tissue between the layers of the pericardium. The adhesions are so dense that in many places the layers cannot be separated.

Heart.—Muscle about normal in thickness. In the myocardium of the left ventricle there is much over-growth of connective tissue. Myocardium of right ventricle is friable, but shows no sclerosis. The aorta is intensely atheromatous. The aortic leaflets are slightly adherent. The mitral orifice is somewhat narrowed. The posterior leaflet is much thickened and is calcareous. The orifice admits three fingers to the first joint, and appears incompetent. The posterior leaflet of the tricuspid valve shows a few fibrous nodules along the line of contact. The pulmonary valves are normal.

Pleura.—Some adhesions on both sides posteriorly, and both sacs are three-quarters full of clear serous fluid. The posterior mediastinal glands lying in close contact with the pericardium are generally enlarged, and several show extensive cheesy degeneration in their centres.

Lungs.—Several old scars at each apex containing a few chalky masses that are evidently tuberculous.

Kidneys and liver are cyanotic and show interstitial change.

Microscopic Examination of Pericardium.—The round masses described present the typical appearances of miliary tubercles. The connective tissue is infiltrated with round cells. In no place is degenerative change noticed, and the tuberculous process appears to be acute.

While tubercular inflammation of serous membranes may form dense fibrous adhesions, there is usually considerable cheesy degeneration accompanying such change. The density of the fibrous bands between the layers, and the absence of any caseous change, either in the tubercles or adhesions, suggest the possibility that the sequence of events in this case may have been first an obliterating pericarditis, non-tuberculous in character, occurring simultaneously with the endocarditis that caused the aortic and mitral lesions, and then a secondary infection by tubercle bacilli from the mediastinal glands.

MORBID ANATOMY OF THE CENTRAL NERVOUS SYSTEM IN TETANUS.

BY JOSEPH SAILER, M.D.

THREE guinea-pigs that had been killed by injections of the tetanus toxin were kindly placed in my hands by Dr. Samuel S. Kneass, for the purpose of making a study of the central nervous system. The brain and cord were removed in each case within two hours of death, and portions placed in a mixture of Müller's fluid and osmic acid (1-per-cent. solution), and in absolute alcohol, the former were subsequently stained in a 1-per-cent. solution of nitrate of silver, to which some drops of a 2-per-cent. solution of phosphortungstic acid had been added, Golgi's method as modified by Berkeley. In these sections the characteristic changes of cellular degeneration were found in the ganglion cells of the anterior cornua of the spinal cord, —that is, varicosity of the protoplasmic processes with disappearance of the lateral buds or gemmules. Most of the cells were affected, and the degree of alteration was considerable. These changes were also found in the motor nuclei of the medulla, notably the hypoglossal. The cells of the cerebrum, however, which stained beautifully, were normal in every respect.

The sections of the pieces that had been hardened in alcohol were stained with methylen blue, according to the method of Nissl, and in Gollasch's hematoxylin mixture. The ganglion cells of the anterior cornua exhibited a considerable degree of cellular degeneration, the protoplasm of the cell took the stain deeply, but irregularly, so that it acquired a mottled appearance, there was no trace of

the chromophilic bodies, and the protoplasmic processes exhibited numerous irregular dilatations. The nucleus was often irregular, and the chromatine appeared rather thicker than usual. The cells of the cerebrum were normal. The pathological conditions are interesting in view of the clinical features of tetanus, and correspond closely with them. The disease may be said to be the result of the elective action of a toxin upon the cells of the peripheral motor neurons, producing irritation and, finally, degeneration. The vessels were normal, the veins of the pia being slightly engorged. Any local action of the bacilli was, of course, impossible.

Meeting of the New England Historic Genealogical Society.

At the meeting of the New England Historic Genealogical Society (Boston), on November 4, Dr. Franklin Bache Stephenson, surgeon, United States Navy, presented a paper entitled, "New England Men as Medical Officers in the Navy of the United States," in which communication were comprised: (1) Notes on the History of the Medical Officer in the Navy (with remarks touching the Navy of the American Revolution); (2) A List of Naval Surgeons (220); (3) Biographic Sketches (11); (4) Bibliography.

Change of Name.

The editors of *Mathews's Medical Quarterly* announce that with the January issue of that publication its name will be changed to *Mathews's Quarterly Journal of Rectal and Gastro-Intestinal Diseases.* There will be no change in the policy of the journal.

Dr. B. Meade Bolton has severed his connection with the Philadelphia Board of Health to fill the professorship of bacteriology and pathology in the University of Missouri.

EDITORIAL.

THE SURGICAL IMPORTANCE OF THE SUB-PERITONEAL TISSUE.

The subperitoneal tissue, as a structure possessing surgical interest, has not until quite recently received recognition. The systematic works on surgery and anatomy have ignored it and the limited references that exist are scattered under various headings through recent literature. William Anderson has made an effort to bring together the information existing on this subject in an address published in the *British Medical Journal* for October 17, 1896.

The subperitoneal tissue, he describes as the lower or subphrenic portion of a vast and complicated distribution of mesoblastic elements primarily developed around the great vessels in front of the spine, and in the early evolution of the embryo, spreading with the laminæ viscerales. It is in intimate contact with the parietes, the peritoneum, and the viscera. Structurally it consists of elastic areolar tissue containing fat and unstripped muscle fibres. The amount of fat present varies greatly in different cases. It exists in greatest amount in front of the spine and around the kidneys. In individuals disposed to the deposition of fat it also collects between the layers of the great omentum and the mesentery and in other situations, adding largely to the size of the body.

In this tissue are contained the great vessels, the receptaculum chyli with its tributaries and their glands, the great sympathetic plexuses, and the lumbar and sacral nerves. The divisions of these structures are invested with sheath-like prolongations that extend almost to their terminations.

The author summarizes the distribution of the subperitoneal tissue as follows: It ensheathes the retroperitoneal structures, it separates the parietal peritoneum from the abdominal wall, it is interposed between the laminæ of all the visceral peritoneal folds, it comes into more or less extensive contact with all the organs in the abdominal and pelvic cavities, and it accompanies as a sheath-like investment every vessel and nerve that escapes from the abdomen.

This brief consideration of the structure and relations of the

subperitoneal tissue will enable the reader to understand the following classification of the surgical conditions to which it is subject: (*a*) Through its structural elements it is liable to (1) neoplasms, fatty fibrous, myomatous, sarcomatous, and cystic; (2) primary inflammatory processes of surgical or accidental origin; (3) atrophic and degenerative changes which favor certain visceral displacements,—as movable kidney and hernia.

(*b*) Through its parietal, peritoneal, and visceral relations it is liable to implication in all inflammatory and malignant affections of the abdomino-pelvic walls, of the peritoneum, and of the viscera; and to infiltration with secretions and excretions of the latter.

(*c*) Through its vascular, glandular, and fetal contents it is subject to hemorrhages, dropsical and lymphatic extravasations, to certain cystic tumors, and to secondary malignant disease.

(*d*) Through its perivascular extensions it may become involved in processes arising in the thorax, perineal, and ischio-rectal regions, external genitals, lower extremities and elsewhere, or its own diseases may spread in any of the directions named, as when a perinephric or subphrenic abscess opens into the mediastinum, pleura, lung, or pericardium; or when a subperitoneal fatty growth runs through the inguinal canal or other weak point in the abdominal wall. It may be very difficult in any case to determine the starting-point of any of these affections since the conditions are favorable for the most rapid and widespread extension of any morbid process. In illustration of this fact it is mentioned that an accumulation of pus in the neighborhood of the right kidney, beneath the diaphragm, or in the space of Retzius would be called perinephric, subphrenic, or prevesical, but it might have had its origin in almost any part of the abdominal or pelvic walls, or in connection with any of the viscera. On the other hand, a subperitoneal abscess, secondary to appendicitis may become iliac, perinephric, subphrenic, retroperitoneal, pelvic, or prevesical, or all of these. In any case, therefore, a diagnosis must be made by exclusion, after carefully taking into consideration the various sources from which such an abscess might arise.

The "idiopathic" form of subperitoneal cellulitis is not frequently met with and occurs chiefly in tuberculous individuals. A cold abscess is the result, and it presents nothing peculiar in regard to signs or treatment. In the syphilitic and metastatic affections the process is a part of a general condition, and the local manifestation needs no special consideration. The traumatic variety, that following contusions and operations upon the abdominal parietes, is of greater surgical interest. It is, however, rarely extensive and yields rapidly to proper drainage and antiseptic treatment. Tuberculous, feeble, and

intemperate individuals are much more apt to be the subjects of this form of the disease than are the robust.

The consecutive variety is said to be the most common and may arise from numerous sources. (1) Subperitoneal cellulitis may originate in any part of the abdomen or pelvis, and from any structure, parietal, visceral, or other, related to the subperitoneal tissue. (2) Cellulitis of parietal origin, as from disease of the vertebra or pelvic bones, involves the subperitoneal tissue directly, while if of visceral origin, it may reach it in one of three ways,—direct continuity when the viscus is uncovered by peritoneum, by perforation of the subperitoneal space at a point of inflammatory adhesion between the visceral and parietal peritoneum, or by necrosis of peritoneum by continued contact with pus in a localized intraperitoneal abscess. (3) Whatever the origin, it may spread by continuity and invade any portion of tissue, showing itself in the iliac, perinephric, subphrenic, or other region, usually remaining on the side of the body on which it began, but occasionally crossing to the opposite side. (4) A subperitoneal abscess tends to find its way to the surface of the body, seldom opening into the peritoneal cavity, and very rarely into a viscus. A localized intraperitoneal abscess, on the other hand, is prone to discharge into any visceral cavity against which it lies. (5) A cellulitis beginning in the subperitoneal tissue may travel away from the abdominal cavity in four chief directions,—outward to the surface of the trunk (abdomen or loins), downward towards the pelvic outlets and lower extremities, inward into the peritoneal cavity, and upward into the thorax.

Of tumors, the lipomata claim the largest share of attention because of their relatively greater frequency, of the large size they sometimes attain, and on account of certain forms closely simulating herniæ,—hernial lipomata. In a recent communication (*Bulletin de l'Académie de Médecine*, No. 33, 1896) Lucas Championnière claims that an excess of fat in the subperitoneal tissue is a frequent factor in the causation of true herniæ, while Anderson believes that the opposite condition predisposes to hernia, and also to movable kidney.

While this brief notice is not intended to be a complete *résumé* of the subject, it should at least be sufficient to establish the need of a closer study of affections of the subperitoneal tissue.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

A Case of Calcareous Degeneration of the Heart and Arteries, with Symmetrical Tumors, Cirrhosis of the Kidney, etc.

Bryom Bramwell (*Edinburgh Hospital Reports*, Vol. IV, 1896) reports a case which he characterizes as the most remarkable which has come under his observation during twenty-seven years of practice. A male, aged 25 years, complained of extreme debility, loss of flesh, and the presence of symmetrical swellings in the axillæ, elbows, groins, inguinal folds, buttocks, and popliteal spaces. He had been for some few years subject to hardships and hard work, but had felt fairly well until three weeks prior to the first observation (April 16, 1894). The most striking features of the case while under observation were extreme asthenia and cardiac debility; anemia and emaciation; pigmentation of the skin; the remarkable subcutaneous and skin swellings; the character of the urine (copions, pale, low specific gravity, large quantity of phosphates, small quantity of albumin, some pus-cells, no casts); and the rigid condition of the radial and superficial vessels. On the first examination the pulse was exceedingly small and feeble, but no rigidity or thickening of the vessels were noted. Yet two weeks later (May 1) both radial arteries were absolutely rigid and pulseless. The hard, rigid arterial cords could be easily traced from the wrists through the atrophied muscles of the forearms to the elbows. A very feeble pulsation could be felt in the brachial arteries. The femoral and popliteal arteries were rigid, and a pulse could be appreciated only with the greatest difficulty. The heart sounds were very indistinct. May 7 he died. The case was suggestive of Addison's disease, but that it was not this simply was conclusively shown by the arterial conditions and the remarkable symmetrical tumors. These recalled, but were unlike, cancerous or sarcomatous infiltrations. They were hard and dense, and in places gave one the impression of being infiltrated with calcareous matter or bone. The hard, stone like character of these growths and the rigid condition of the arteries (in a man of 25 years) were unexplainable. Not much importance was attached to the condition of the urine. At the autopsy the heart was an extraordinarily fine example of calcareous degeneration. Numerous calcareous deposits were scattered throughout the organ, especially in the left ventricle. The trabeculæ carniæ and papillary muscles of the left ventricle were almost entirely calcified. The calcareous infiltration affected not only the interstitial tissue, but also the muscular fibres of the heart. The iliac, femoral, popliteal, tibial, and radial arteries were absolutely calcareous from top to bottom, and converted into rigid tubes. The subcutaneous swellings were filled with calcareous material which was deposited in and

around the blood-vessels, leading to the production of inflammatory changes with giant cells. The right kidney was entirely destroyed. The left was in a condition of very advanced cirrhosis, with calcareous deposits in the cortex and arteries of the pyramids. The most probable explanation which can be advanced of this extraordinary case is the following: (1) That in early life (at the age of 11) the patient suffered with pyelonephritis of the right kidney, and that the kidney had then been entirely destroyed; (2) that the exposure and hardships to which the patient had been subject had induced disease in the other kidney, or, what is more probable, had aggravated a cirrhotic process which was already present in the left kidney, and that this had slowly and gradually progressed until the extreme condition of cirrhosis which was found after death had been produced; (3) that, for some inexplicable reason, the blood had become impregnated with calcareous salts in solution; (4) that owing to the advanced cirrhotic condition of the kidney, the calcareous material had (instead of being excreted by the kidney) been retained in the blood, and finally deposited in the walls of the heart and peripheral arteries, and extravasated into the subcutaneous tissues; and (5) that local irritation, the result of mechanical movement, probably played a part in determining the deposit of calcareous material in the walls of the heart and in the subcutaneous tissues over the joint surfaces, gluteal and axillary folds, etc. That the calcareous infiltration of the heart, arteries, and subcutaneous tissues was rapidly produced is probable from the fact that until within a short time, less than three months (about six weeks or thereabouts), prior to his death, he was able to engage without discomfort in the most laborious work, which would have been impossible with heart and vessels in the condition they were at death. The subcutaneous swellings were not present six weeks before his death. It is almost impossible to believe that the extreme degree of calcareous infiltration which was present at the time of death could have been developed in a few days. It must, however, be admitted that the subcutaneous tumors, and probably, therefore, the calcareous deposits in the skin were developed in the course of a few weeks.

So-called Causeless Hemiplegia.

Philip (*Edinburgh Hospital Reports*, Vol. IV, 1896), referring to the literature, of the subject, reports in detail one of three cases he had observed. A female, ill with phthisis pulmonalis, rather rapidly declining, developed albumin in her urine; later some edema about the ankles, tube casts, and ascites. Suddenly she developed hemiplegia of the right side with aphasia. Consciousness was partially lost, but quickly recovered. Sixteen days later she died. The diagnosis was tubercular disease of the lungs, with waxy affection of the kidneys and intestine. This was confirmed by the necropsy. In addition there had been supposed a thrombosis of the left middle cerebral artery. The veins on the surface of the brain were engorged. Careful macroscopic and microscopic examination of the brain revealed no evidence of disease. The arteries seemed healthy throughout. The cause of the hemiplegia? A review of the clinical and pathological facts of the case lead to the conclusion that the hemiplegia was due to the rapid supervention of edema of the brain. Amidst the diversity of conditions noted in reports of similar cases, the record of congestion and edema on one or both sides is remarkably frequent. The fatal issue, which was preceded by the hemiplegic seizure, was generally determined by circulatory breakdown, and the expression of this was found post mortem in edema of the brain. From pathologic data there seems sufficient reason for the suggestion, whatever theory we hold regarding the production of uremia, that the hemiplegia which has sometimes been attributed to uremia, may be referable to a

unilateral cerebral edema. It seems most reasonable to interpret the phenomena as the result not of pressure on the cerebral substance directly by the edematous fluid, but of the anemia which is induced in the cerebral circulation by the pressure of the fluid on the delicate cerebral vessels. There is no reason for supposing that the edema may not be unilateral, as localized congestions and edema elsewhere are of very frequent occurrence. Or the edema may be bilateral or universal, and the vessels on one side of the brain be differently disposed in respect to resistance to pressure from without. It is not inconceivable that a disturbance of the vasomotor condition may occur reflexly, and the vessels on one side be relatively dilated, or the vessels on one side may be more liable to yield to pressure from without than those of the other side. This might fairly be proposed as an explanation of those cases in which an apparently causeless hemiplegia supervenes in an old subject with atheromatous vessels and concurrent kidney-disease.

Weather Neuroses.

Löwenfeld (*Münchener medicinische Wochenschrift*, No. 5, 1896) refers to various well-known diseases of the nervous system, whose symptoms, or at least the intensity of whose symptoms, are greatly influenced by the state of the weather. This is true both of anatomically demonstrable diseases, and of various neuroses. Of the former he mentions the lancinating pains of locomotor ataxia, chronic myelitis, and meningomyelitis, multiple neuritis, and various neuralgias; of the latter, hysteria, epilepsia, and neurasthenia. He refers further to the also well-known influence of the state of the weather on the disposition, desire, and ability to work of various nervous and other people. In addition to these conditions there are, however, various others,—the real "weather neuroses,"—whose presence is manifest only during certain states of the weather. At other times the patients usually have no complaints. The symptoms of these "weather neuroses" are usually pain, generally of a lancinating character, paresthesias, and muscular weakness. The localization, distribution, intensity, and duration of these are subject to great variation. Complications with other nervous conditions, especially neurasthenia, are quite common.

Hereditary influences are of importance in determining the condition. The development of the disorder may be due to various fever conditions or anomalies of nutrition. The majority of cases of pains in the joints and extremities in old people, usually incorrectly recognized as chronic muscular rheumatism, may more properly be looked upon as "weather neuroses." The existing cause of these symptoms is most probably the sudden change in the amount of moisture in the atmosphere, the condition of the atmospheric electricity, and possibly, also, the quantity of ozone in the air. The seat of the affection is in the peripheral nervous system, including the nerve roots. The prognosis in young individuals and those of middle age without hereditary predisposition is favorable. In persons hereditarily predisposed, and in the aged, the prognosis as to cure is unfavorable. The treatment should consist of electricity to the back and over the nerve course, with attention to the general nutrition. In severe attacks in the aged sedative drugs are indicated.

The Differential Diagnosis of Hysterical and Epileptic Crises.

Bonjour (*Revue médicale de la Suisse romaine*, 1896, No. 2, and *Centralblatt für innere Medicin*, No. 33, 1896) remarks that easy as is the differential diagnosis between hysterical and epileptic attacks in many cases, in other isolated cases it is

extremely difficult, wellnigh impossible. As of value in the differential diagnosis may be mentioned the following: prodromal symptoms are frequent in epilepsy, rare in hysteria; the aura is seldom absent in epilepsy, and the accompanying hallucinations often urge the patient to murder, burnings, and robbery; the aura is much less frequently present in hysteria, and the accompanying hallucinations are less alarming, but are of longer duration. The initial cry in epilepsy is piercing, the patient grows pale, and falls unconscious, possibly wounding herself; the hysterical patient is never entirely unconscious, and does not suffer any injury. The dilatation of the pupil, rigidity, congestion of the face, and salivation are more constant in epilepsy than in hysteria. The tonic and clonic convulsions are much more intense in epilepsy, incontinence of urine, and feces are more frequent, and there is usually present complete anesthesia,—occasionally hyperesthesia. The pulse during the epileptic seizure is small, scarcely palpable, but slightly changed during the hysterical attack. The sphygmogram shows also marked differences. The termination of the attack is more lytic in epilepsy, more critical in hysteria. Finally, the hysterical is particularly susceptible to suggestion, and hypnotism and their attacks may be by these measures controlled for a long time, whereas the influence of these agents over the epileptic is minimal.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

The Practical Uses of the Röntgen Rays.

Rowland (*British Medical Journal*, October 3, 1896) gives the following as the practical uses of the Röntgen rays. In the head, while bone is the most opaque tissue of the body, it is quite possible by continuing the exposure for a sufficient length of time to locate the position of a bullet in the brain tissue. In the cervical spine the position of a tuberculous focus can be readily ascertained. For this purpose it is best to skiagraph from the side, so as to obtain a profile view.

Of the heart nothing except a shadow outline can be obtained. It is especially useful in children who have swallowed marbles, coins, etc.

In cases of thoracic caries the difficulties can be overcome by so adjusting the position of the tube as to direct the rays laterally to the sternum, and so as to traverse an intercostal space. In the abdomen the practical utility of the process is confined to the detection of foreign bodies, the location of Murphy's buttons, and the diagnosis of lumbar caries, fractures, and dislocations.

Of the possibility of diagnosing stone in the kidney it is too early to speak with certainty. The process has proved of most value in the limbs, particularly in fractures, dislocations, and foreign bodies. In hip-disease occurring in children it is of service, but he has not been successful in getting satisfactory negatives of robust and athletic men. How much further it will be of service it is impossible to foretell.

The Value of the Mixed Toxins in the Treatment of Inoperable Malignant Diseases.

Coley (*American Journal of the Medical Sciences*, September, 1896), in an elaborate article on the treatment of inoperable malignant growths by means of the injection of the mixed toxins of the streptococcus of erysipelas and bacillus prodigiosus, presents his conclusions as follows:

(1) The mixed toxins of erysipelas and bacillus prodigiosus exercise an antagonistic and specific influence upon malignant tumors, which influence in a certain proportion of cases may be curative.

(2) This influence is slight in most cases of carcinoma (including epithelioma); most marked in sarcoma, but varies with the different types, the spindle celled form showing by far the greatest influence.

(3) The action of the toxins is not only local in character, but systemic.

(4) The toxins should be used only in clearly inoperable cases, or after primary operation, to prevent recurrence.

(5) The results will vary greatly with the strength of the preparation, the most virulent cultures giving the best results.

More than one-half of the cases of sarcoma showed more or less improvement.

Enchondrosis.

Ricketts (*Journal of the American Medical Association*, August 22, 1896) recommends the following in the treatment of disease of the costal cartilages:

(1) None but the most radical operations should be made at the onset of the disease.

(2) At least one-half inch of the bony attachment of the cartilage should be removed.

(3) Great care should be exercised to avoid puncture of the pleura.

(4) Surgical anesthesia should always be resorted to.

(5) If the sternum be diseased, a portion of the normal should be removed along with the diseased tissue.

(6) Unless bone is removed with the cartilages, the wound should be allowed to heal by granulation and not by flaps.

(7) Flaps should be resorted to when possible.

(8) There is no evidence that medication is of any avail.

Abscess of the Lung.

Ingals (*Journal of the American Medical Association*, August 22, 1896) advises the following treatment in pulmonary abscess. The expectant plan is best in the beginning, usually for three or four weeks. If by this time the abscess has not opened spontaneously and an accurate diagnosis can be made, surgical measures should be adopted. Common experience and the record of the author's own cases show that resection of the ribs and perforation of the lung to let out the pus should be a *dernier ressort*. Aspiration alone is competent to effect a cure in many cases where necrosis of lung tissue is small, even though the collection of pus be large. Where there is considerable necrosis of tissue, or where aspiration has been tried and failed, the more radical operation of cutting down and resecting a rib and then perforating the lung by the thermo-cautery should be adopted. Search for an abscess may be made with a fine clean needle, three inches in length, and aspiration then done with a larger one. The needles are disinfected by dipping in a mixture

of equal parts of carbolic acid and sweet almond oil. The pus should be removed and aspiration repeated in five or ten days if the abscess refills; this may be done again and again if necessary. It is best not to attempt to wash out the cavity unless the pus is very offensive. If from gangrene or other cause the rib is resected, then the lung may be opened at once if the pleura is adherent; if not adherent, then it should be stitched together and the opening made in fifteen or twenty-four hours.

The Use of Methyl-Violet in Malignant Diseases.

T. Griffith-Davis (*New York Medical Journal*, October 10, 1896) reports favorably on the use of methyl-violet in malignant and other diseases. Six cases are reported. The first was one of purulent conjunctivitis treated with a 5-per-cent. solution night and morning, followed by boracic wash; prompt recovery. The second was an abscess of the axilla. The third was an inoperable case of malignant disease of the uterus. She was douched night and morning with peroxide of hydrogen, and then the sores painted with 15 per cent. methyl-violet in 95 per cent. alcohol. This was followed by flexible collodion. Later three-grain suppositories of methyl-violet were introduced three times a week. The pain began to subside promptly, and in three months there was no pus, pain, or odor. Of these there was no return, although the patient died in eleven months.

Case four was one squamous epithelioma of the nipple (Paget's disease? Ed.). It was painted with a 15-per-cent. solution, followed by flexible collodion and covered with cotton. This was done every four days. Two months later a large mass came away, after which healing occurred. Two years later the patient was still well.

Case five was a growth an inch and a half in diameter at the angle of the nose on a man aged 56 years. A 15-per-cent. solution was used followed by flexible collodion. In four months a piece the size of a hazel-nut dropped out, and in two weeks more another, and a third was tied off. A 10-per-cent. solution was given to be used at home once daily. The ultimate result is not stated.

Case six was in a man, aged 62 years, with a sore an inch and a half wide surrounded by an inflamed area fully three inches in diameter. The itching and stinging were unbearable. Treatment was commenced with a 10 per-cent. solution. The pain and itching began to subside at once. He applied the solution at home. In nine months all the inflammation had disappeared and the hole in the cheek had filled to the level of the face. This case also is still under treatment.

The solution should be prepared in small quantities and kept in the dark and well-corked.

Ambulatory Treatment of Fractures in Children.

Bradford (*Annals of Surgery*, October, 1896) recommends the use of a modified form of Thomas's knee-splint in fractures of the lower extremity in children. Thomas's splint consists of two side pieces continuous below the foot with the two upper ends attached to a padded ring on which the patient sits. Bradford has modified this splint by adding a winch beneath the foot to which the adhesive plaster extension is applied, and also a hip-band fastened to the outer side of the perineal ring by a joint. The adhesive plaster extension is applied to the limb and fastened to the winch, which is then turned until extension is sufficient. Coaptation splints are also applied at the seat of fracture. The apparatus is confined to the leg by plaster-of-Paris bandages.

In fractures of the upper portion of the thigh the ordinary long traction splint as used in hip-disease is advised with the use of coaptation splints. A cheap emergency appliance has been suggested by Dr. W. H. J. Hall. It consists of an ordinary wooden crutch strapped to the inner side of the thigh. It is allowed to project an inch or two beyond the foot and has an iron bracket secured to its lower end. In all these three forms of apparatus a high shoe is to be worn on the sound limb and axillary crutches used. The hip-band is to be used when it is desirable to correct any tendency to eversion. The patients are allowed to go around in about a week after the injury.

Surgical and Mechanical Relief for the so-called Hopelessly Paralytic Cripples.

Willard (*Medical and Surgical Reporter*, October 17, 1896) presents his views as to the measures to be taken in the treatment of paralytic cases, as follows:

(1) A limb contracted at the hip, knee, or ankle is mechanically unfit for locomotion, but if brought into a straight line with the body it can sustain the weight.

(2) Surgical measures, tenotomy, myotomy, osteotomy, or excision are frequently required to accomplish this result.

(3) Subsequent support by mechanical appliances is usually necessary, together with the temporary use of crutches, wheeled crutches, or other support.

(4) By a judicious combination of these measures, a case having sufficient strength in the arms to assist in locomotion need not be considered hopeless.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Bromoform in Whooping-Cough.

Dr. Ferreira reports (*Bulletin générale de Thérapeutique*, June 30, 1896) twelve cases of whooping-cough treated with remarkable results by bromoform. The bromoform was given in doses of three to six drops for a child aged one year, and six to fifteen for older children. It was given in water with sufficient alcohol to dissolve it. He says that within two or three days very marked lessening both in the frequency and violence of the paroxysms may be observed, and a complete cure is accomplished in six to twelve days. He claims for the drug a double action, one a direct action on the pathogenic micro-organisms, the other a sedative effect on the nervous system.—(Translated by Dr. H. C. Wood, Jr.)

Groundsel as an Emmenagogue.

At the suggestion of Dr. Heim, Drs. Bardet and Boloynesi (*Bulletin générale de Thérapeutique*, July 23, 1896) tried the extract of senecia vulgaris in twenty cases of amenorrhea and dysmenorrhea. The cases were due to a great

variety of causes,—hysteria, epilepsy, phthisis, chlorosis, exophthalmic goitre, etc. The drug was used in doses of twenty-five centigrammes (four grains) per day, increasing twenty-five centigrammes each day, until two to five grammes (thirty to seventy-five grains) had been administered. The conclusion was reached that the drug is an excellent emmenagogue, and causes the flow while bringing about, like rue, a utero-ovarian congestion. In dysmenorrhea, while provoking the menstrual discharge, it did not relieve the pain.—(Translated by Dr. H. C. Wood, Jr.)

Local Applications of Salicylate of Methyl in Rheumatism.

Tannois and Tinossier, at a meeting of the Congrès Français de Médecin, at Nancy (*Médecine moderne*, August 19, 1896), presented a report on the treatment of rheumatism by local applications of salicylate of methyl, a method which they claim to have been the first to propose. They have used this method in acute, subacute, and gonorrheal rheumatism, and in neuritis and neuralgia. In the cases the salicylate of methyl had a well-marked effect on the pain, causing it to cease in a variable time and for a longer or shorter period according to the nature of the case, and bringing about a cure in a few days. The drug may be used in cases in which for any reason it is desired to obtain a local effect, and when the ordinary remedies for rheumatism are not well borne by the stomach. Salicylate of methyl acts well in acute articular rheumatism, but on account of the difficulty in applying it to painful joints, it must be employed in such cases only after the internal administration of remedies has failed. In subacute and chronic forms, in the painful paroxysms which occur from time to time in the different varieties of deforming rheumatism, local absorption of sodium salicylate acts as well as salicylates taken by the mouth, often better.

The Action of Lysidine and Piperazine as Uric Acid Solvents.

Goodbody (*British Medical Journal*, October 3, 1896), at the sixty-fourth annual meeting of the British Medical Association, presented a paper on the above subject, in which he drew the following conclusions: Piperazine and lysidine, when taken internally, appear to increase the elimination of uric acid, not by increasing its formation in the organism, but by rendering the blood more capable of removing it from the tissues by increasing its solvent power. So that prolonged administration of these drugs in the end causes a diminution in the quantity of uric acid eliminated by the kidneys. Piperazine and lysidine, when added to a urine tending to deposit uric acid gravel, are capable of hindering the deposit during standing. The total experiments show that lysidine is a more powerful solvent of a uric acid than piperazine. Both drugs are diuretics, and cause an increased elimination of nitrogen, which is partly due to the increase of the nitrogen in the uric acid, and in part due to its diuretic action.

A Modified Method of Administering Oxygen and Ether.

Hare (*Therapeutic Gazette*, July 15, 1896) states that the clinical results which have so far been obtained from the administration of ether and chloroform vapor when combined with oxygen-gas seem to prove beyond all doubt that the oxygen decreases the danger of the anesthetic, and to a large extent obviates the difficulties which surround the administration of these drugs. Thus, when oxygen is given with ether, vomiting is less frequently met with, excessive pallor is rarely seen, and post-operative depression seems to be largely avoided. As a general

rule, however, it has been the custom of physicians and surgeons, who have employed oxygen with ether or chloroform, to place the anesthetic in a wash-bottle and then allow the oxygen-gas to pass through it in such a way that the patient received in the inhaler a mixture of anesthetic vapor and oxygen, the mixture being made by the passage of oxygen-gas through the liquid anesthetic in the bottle. An evident disadvantage of this arrangement is that the quantity of anesthetic which is volatilized can only be in direct proportion to the volume of oxygen-gas which is forced through the wash-bottle, and, therefore, with every increase in the quantity of vapor which the patient receives, he must also receive an increased quantity of oxygen. It has been claimed, too, by those who have employed the ether and oxygen combination most frequently, that in a large proportion of cases a greater length of time is required for anesthetizing, and that in some cases it seems almost impossible to get the patient under the direct influence of the drug. Dr. Hare believes that this difficulty lies in the fact that, as soon as a large quantity of oxygen-gas is used to convey a large quantity of anesthetic vapor to the lungs, the patient passes into a condition which is called by physiologists apnea. The respiratory centre is no longer irritated by the normal proportions of carbonic acid in the blood, and therefore sends out feeble respiratory impulses; and, as the patient does not breathe as rapidly or as deeply as before, the result is that very small quantities of the anesthetic are taken into the body. Dr. Hare has employed an apparatus which he suggests as a substitute for the one heretofore used. It consists of a funnel-shaped piece of leather having a greater diameter in one direction than in another, into which is fitted a piece of soft felt or spongiopiline almost a quarter of an inch thick. In the under surface of the leather cone is inserted a small metal tube, and at the opening of this tube a small hole is cut in the spongiopiline. The ether is then poured upon the spongiopiline in the cone, in the apex of which is placed some absorbent cotton. The oxygen enters the cone by means of a rubber tube attached to the metal entrance mentioned. By this arrangement several objects are accomplished:

(1) The supply of oxygen can be delivered to the patient in varying quantities without altering the amount of the anesthetic given.

(2) Any quantity of anesthetic can be employed without necessarily increasing the oxygen.

(3) The leather cone prevents the rapid evaporation of ether from the outer side of the spongiopiline.

(4) The spongiopiline, being much more porous than an ordinary towel, will retain a large quantity of ether in liquid form when this drug is poured upon it.

(5) If desired, the same apparatus can be used for the administration of chloroform by removing the metal cap on the smaller end of the cone, as in this way the patient will receive not only the anesthetic vapor and the oxygen, but also fresh air, through the end of the cone in such quantities as the physician deems wise.

In these cases it is best to use the attachment known as the Krohne and Senseman "respiration indicator," a small feather on a pivot which moves to and fro with the motions of respiration, thereby providing the physician with a gauge as to the rapidity and force of the respiratory movements. The soft felt is very cheap, and a fresh piece can be used for each patient.

Treatment of Dysentery.

Testevin (*Journal de Médecine et de Chirurgie pratique*, June 10, 1896) has obtained excellent results in the treatment of dysentery by hot injections of beechwood creosote. The enema consists of creosote, fifteen grains; laudanum, ten

drops; boiled milk, five fluidrachms; boiled water, six and a half fluidounces. The treatment is antiseptic, calmative, and hemostatic. Before injecting the creosote the rectum is cleansed with a solution of boric acid and salicylic acid. The patient is directed to retain the creosote enema as long as possible. When retained over night, recovery is rapid. When the bowel is very irritable, the retention of the creosote may be secured by the previous use of a suppository containing cocaine and belladonna. The author also recommends the internal use of calomel and salol.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

Three Successful Cesarean Sections upon the same Woman.

C. N. Van de Poll, of Amsterdam (*Centralblatt für Gynäkologie*, No. 21, 1896), reports the case of a woman with a generally contracted, rachitic pelvis, whose first three labors resulted in the death of the child. She was told that Cesarean section would be necessary if she became pregnant again. Professor Von der Mey performed Cesarean section twice upon her, each time delivering a healthy child. Seven years after the second operation she became pregnant, and was delivered by Van de Poll, who was forced to perform a Porro operation on account of the broad, firm adhesion between the lower uterine wall and the abdominal wall. The child lived and the mother made a good recovery.

Alcohol as a Disinfectant in Obstetrical Practice.

Ahlfeld and Vahle (*Deutsche medicinische Wochenschrift*, No. 6, 1896) have reported the result of some experiments made to ascertain the value of alcohol as a practical disinfectant in obstetric practice. The results obtained by disinfecting the hands with alcohol have been ascribed to the solvent properties of alcohol upon fatty tissue, thus permitting bichloride of mercury, or other antiseptic, to come into immediate contact with the bacteria. It has been asserted by some that alcohol does not destroy bacteria, but that it coagulates the epithelia of the skin, and in this way hardens them without preventing the passage of germs. It has been observed, however, that alcohol does destroy germs, but that it acts more efficiently upon those containing water or those found in tissues containing water. Ahlfeld remarks that alcohol does not act simply by dissolving fatty substances, as ether, which is a better solvent of fat, is not very efficient as an antiseptic. Experiments have proved that alcohol exerts a direct influence in destroying virulent streptococci. Alcohol exerts but feeble influence upon dried tissues containing bacteria and upon bacteria from which the water has been removed. An experiment was made with amniotic membrane when wet and when dry, which illustrated in a striking manner the action of alcohol upon a moist membrane. Experiments upon the hands of attendants and nurses demonstrated the value of alcohol as a disinfectant.

Régime during Pregnancy.

Eichholz (*La Revue médicale*, May 16, 1896) believes many complications accompanying and following pregnancy to be due to errors in *régime*. The pregnant woman, he thinks, should avoid excesses of water and albumin; the one causing excessive development of the fetus, and the other giving rise to excessive secretion of liquor amnii. He prescribes the following *régime* based upon twenty-five observations: Fresh meat once daily in small quantity. Green vegetables, salad, potatoes, bread, and butter.

Avoid as much as possible eggs, peas, and beans.

Wine, beer, and alcohol are forbidden, and only enough liquids should be taken to allay thirst. The advantages are—

(1) Activity is preserved up to time of delivery; sensations of fulness, fatigue, thirst, and constipation disappear early.

(2) Rapidity and facility of delivery even in cases in which previously it had been difficult.

(3) A limited quantity of amniotic fluid.

(4) Possibility of nursing offspring, the milk being of good quality and quantity.

The medium weight of the children was six pounds, and the circumference of the head thirty-three to thirty-four centimetres.

Syphilis of Conception.

G. R. d'Aulney (*Conceptuo-Syphilis*, Paris, 1895), in concluding his pamphlet, states that the so-called syphilis of conception has many points of similarity to hereditary syphilis: it is a syphilis without chancre or adenopathy, and is a general disease from the beginning. It is transmitted through the placental circulation. As a rule, it is benign as far as the mother is concerned, but very serious as regards the fetus. It appears either during pregnancy, immediately after labor or abortion, or perhaps some time after. It may be manifested by roseola and various syphilides and proceed to the tertiary stage, or it may, but rarely, begin with tertiary symptoms. Frequently, also, it may develop, without any cutaneous or mucous manifestations at all, revealing itself only by persistent cephalalgias, nervousness, lassitude, slight fever, emaciation without appreciable cause, alopecia without lesion of the scalp, chilliness, abundant sweating without hyperthermia, osteocopic pains, and periostitis of the tibia, ribs, and clavicle simulating rheumatism.

The Influence of Pregnancy on Diseases of the Heart.

Jaccoud (*Semaine Médicale*, September 11, 1896) illustrates his belief that the existence of heart-disease does not in every case constitute a contraindication to marriage by citing the following case:

The patient before marriage had suffered from a long and severe attack of acute rheumatism, with evidences of cardiac mischief. Two years later she married and passed through three successive childbirths and one miscarriage without distressing cardiac symptoms. After her fourth pregnancy she began to feel short of breath, and after the fifth labor symptoms of acute asystole with dyspnea and hemoptysis presented themselves. There was no doubt that permanent damage to the heart had resulted from the repeated pregnancies, and a double mitral lesion with tricuspid incontinence was diagnosed. Pregnancy is always liable to cause serious disturbances of the cardio-pulmonary circulation and to throw additional

work on the heart. Patients who suffer from mitral lesions, which rapidly affect the lesser circulation, frequently manifest towards the fifth or sixth month gravido-cardiac symptoms, as dyspnea and hemoptysis. It is yet obvious that a diseased heart up to a certain point may suffer no inconvenience from pregnancy. A too hard and fast line must not be drawn in advising or withholding consent to marriage. The wishes and ideas of the patient must be considered, and also the depressing and injurious effect upon the heart of withholding consent. The degree of the lesion and the absence or presence of gravido-cardiac symptoms should be noticed, the latter forming a decided bar to marriage, though the effect of treatment upon this condition should determine the final decision. The occupation and surroundings of the patient, the possibility of her taking prolonged rest, if necessary, should be considered. A milk diet is of great importance,—two or three litres should be taken daily from the second or third month of pregnancy. This is a powerful aid to the circulation by reason of its diuretic action, and not only are the gravido-cardiac symptoms warded off, but the appearance of albumin in the urine is prevented.

Hematoma of the Vulva after Labor.

Lefranc (*L'Abeille médicale*, No. 21, 1896) attended a woman in labor, who developed hematoma of the right labium majus two hours after her delivery. It grew rapidly in size as Lefranc observed it, extending to the anus and to Douglas's cul-de-sac. It was laid open and packed with iodoform gauze. Forceps had not been used. The patient was free from cardiac and vascular disease, and there was no trace of varix, no narrowness of the vagina, and no contraction of the pelvis. It is probable that the vagina had become detached from the subjacent tissue to a considerable extent.

Superfetation.

P. Gustin (*Archives de Gynécologie et de Tocology*, July, 1896) reported a case of a woman convalescing from typhoid fever, who expelled a fetus of three months and one of six weeks.

Painless Treatment of Ophthalmia Neonatorum.

Hjort (*Semaine Médicale*, September 23, 1896) remarks that results can be secured in the treatment of ophthalmia neonatorum quite as good as by the classic method, and with less trouble, by first dropping into the eye oxygenated water of 1 or 1.5 per cent., which causes effervescence. The eye is then washed with 2-per-cent. borated water, moving the lids slightly until all the pus has been cleaned out, when the solution of nitrate of silver of 1 per cent. is gradually instilled.

This method does not require the everting of the lids, and should be repeated at first four times a day. It can be safely intrusted to a well-trained nurse.

Eczema of the Breast and Nipple.

Dr. Hyde (*Twentieth Century Practice*, Vol. v, p. 226) treats eczema of the breast and nipple with soothing lotions, dusting powders, and cooling salves. If fissures have occurred, he emphasizes that every effort should be made to avoid weaning the child that is dependent upon its mother's milk. In such event, pencilling of the crack with weak solutions of nitrate of silver or with compound tincture

of benzoin may be used. The Lassar paste, made stiff enough with powdered talc to resist simple contacts sufficient to remove a softer ointment, is an admirable application to these surfaces. All lotions and salves require removal with a weak alkaline and glycerin wash before the child is put to the breast. Rubber nipples and shields are not wholly satisfactory. In the treatment of eczema in this region it is of value to spread strips of soft muslin with the ointment or pomade used, and to retain the dressing in contact with the inflamed surface by the aid of cheese-cloth bandages.

Relation between Ovulation and Menstruation.

Bossi (*Annali di Ostetrica e Ginecologica*, September, 1896) records three cases illustrating the complexity of the problem of menstruation and ovulation.

The first case was that of a woman, aged 25 years, who had suffered since her 17th year from monthly attacks of enterorrhagia associated with hysteriform attacks. Since marriage the bleeding from the anus and other troubles had become worse, and coitus had become impossible. It was then found, on examination, that the vagina was absent and that the uterus and ovaries were infantile. An unsuccessful attempt was made to establish a vaginal canal.

The second case was that of a 37-year-old woman who had first menstruated regularly and then suffered from menorrhagia. Curettage, twice performed, afforded no relief. Vaginal hysterectomy was then performed, and during its performance no trace of ovaries or tubes was found. The patient nearly died from hemorrhage two hours after the operation, from an abnormal arrangement of the vaginal vessels.

In the third case convulsions had occurred at monthly periods for three years. There was an absence of the vagina, an infantile uterus, and the ovaries lay in the inguinal rings, one on each side. There was complete amenorrhea. After the removal of both the ovaries the convulsions ceased. They were large and each showed a recent corpus luteum.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

A Case where the Vaginal Vault was Ruptured during Coitus.

Siginsky (*Journal Akuscherstwa i Shenskich Bolesnej*, No. 2, 1896, *Centralblatt für Gynäkologie*, No. 41, 1896). The patient was 31 years of age, and came to the writer because of acute anemia, caused by severe hemorrhage from the vagina after coitus. The patient had been in the sitting position and the man upright during the coitus. The penis measured eight and a half inches. Examination showed no fresh injury to the external genitals, the uterus was normal in size but retroflexed, the vagina of normal length, the entire posterior, the left and half of the right vaginal vault had been torn across. The wound penetrated the entire

thickness of the vaginal wall so that the supravaginal cervix could be seen. The peritoneum was not injured and there was no intestinal prolapse. The wound was closed with seven silk sutures. The patient recovered. Siginsky believes the factors which caused the injury were the half-sitting position, the retroflexion of the uterus, and the enormous length of the penis.

Ichthyol in the Treatment of Gonorrhea in the Female.

Canova (*Centralblatt für Gynäkologie*, No. 41, 1896), after having employed ichthyol in a large number of cases, recommends the injection of a 1–2 per cent. solution as the best method for the cure of gonorrhea. He particularly states that the injection is easily borne, and that it does not cause pain. The result is always positive; after the first injection the inflammation disappears, and in some cases the patient is well in six days.

The Sterilization of Catgut.

Gueynatz (*L'Abeille médicale*, No. 25, 1892) recommends the use of a ½ per-cent. solution of silver nitrate to sterilized catgut. After removing the fat it is placed in this solution for twenty-four hours. That this renders the catgut sterile has been proven through experimentation on animals. He also recommends dry heat at a temperature of 150° C. for two hours, as a sure method of sterilization. A higher temperature than 150° C. renders the catgut brittle.

A Case of Endothelioma of the Vaginal Cervix.

Brætz (*Archiv für Gynäkologie*, Band II) describes a case appearing at the Halle clinic for women which he believes to be an endothelioma. A similar case has been reported by Amann in the same journal. The patient was 18 years of age and came complaining of leucorrhea. A tumor, two centimetres in diameter, was found growing from the posterior lip of the cervix. It bled easily and the tissue was very friable, and easily broken off. Kaltenbach removed the uterus *per vaginam*. Four weeks after leaving the hospital the patient died. The cause of death was not determined, but very possibly resulted from metastasis. The microscopical sections are shown in six illustrations. The growth was thought to have originated in the endothelium of the lymph-spaces.

A Method of Rapid Preparation of Permanently Stained Microscopical Sections for Diagnosis.

Pick (*Centralblatt für Gynäkologie*, No. 40, 1896) writes that the discussions regarding the worth of microscopical diagnosis of malignant diseases of the uterus have recently, in text-books and by gynecologists, become newly recognized. It, however, cannot be said that anything new has been developed in this important method of diagnosis. By the technique employed by the writer in the laboratory of the Landan Clinic for Women portions of curetted or excised tissue are permanently stained and prepared in from twelve to fifteen minutes, as follows:

(1) The portions of tissue are washed free of blood and immediately frozen and cut with the small Young microtome.

(2) The sections are carried by the finger-tip into a 2-per-cent.-formalin solution, and allowed to remain two or three minutes. (Formalin solution should be made with boiled water.)

(3) They are washed for a half minute in water.
(4) Placed three or four minutes in a 4-per-cent. solution of alum carmine.
(5) Washed one minute in water.
(6) Placed in 80 per cent. alcohol for ten seconds.
(7) In carbol-xyol for one minute. And,
(8) Mounted in Canada balsam.

The advantages of this method are the more satisfactory and rapid preparation of sections: the cells are fixed by the formalin, the tissue not contracted by alcohol, the sections do not tear easily, take the stain well, are more easily and better cleared, and are lasting preparations. The preparation of so satisfactory sections renders the diagnosis more positive, and, since it requires only twelve to fifteen minutes, can be determined during operation.

Pick describes a case demonstrating the practicability of the method: A patient, 25 years of age, complained of metrorrhagia, and the uterine cavity had been curetted three times during the last seven months. On the right side of the fundus projecting into the uterine cavity was found a tumor the size of a walnut.

Clinical Diagnosis.—Fibroid tumor with hemorrhagic endometritis. *Treatment:* Hysterotomy with enucleation. At the operation the enucleation was found difficult, and therefore a portion of the tumor was excised, prepared after the above method, and a diagnosis of carcinoma determined in eight minutes. The operation was without delay converted into a vaginal hysterectomy.

The Intraperitoneal Rupture of Ovarian Cysts.

Boursier (*L'Abeille médicale*, No. 21, 1896) reports three cases which show the tolerance of the peritoneum for the contents of ovarian cysts. In the first case two quarts of gelatinous fluid from a ruptured ovarian cyst was found free in the peritoneal cavity. The patient recovered. Lannelongue describes a case where a parovarian cyst had ruptured, and after operation the patient recovered without further trouble. In another case a cystic and purulent sarcomatous ovarian tumor was found ruptured, and the pus leaking into the peritoneal cavity. The tumor was removed and the patient got well.

PATHOLOGY.

UNDER THE CHARGE OF

JOHN GUITÉRAS, M.D.,

ASSISTED BY

DAVID RIESMAN.

The Relations of the Morbid Conditions Dependent on, or Associated with, the Presence of Streptococci.

Woodhead (*British Medical Journal*, October 3, 1896), in opening the discussion on the above subject at the recent meeting of the British Medical Association, drew attention to the fact that in many cases the streptococcus plays merely

a secondary part, and is often a concomitant rather than a primary factor in the production of disease. That this is not to be wondered at is evident, when we come to consider how all-pervading streptococci are. He was convinced that many of the processes, which at present are looked upon as being merely streptococcal, will be found to be mixed infections in which other organisms play a primary or adjuvant part; the bacilli coli communis being one of the organisms which must in this light be studied along with the streptococcus. During recent years there was a tendency in all bacteriological investigations to describe morphological differences between groups of organisms with common functions, and which give rise to similar products; and, also, on the other hand, to ascribe different functional activities to organisms identically the same. Six different pyogenic streptococci have been described and arranged in three groups.

In the first were the streptococcus pyogenes edematous (Flügge) and the streptococcus septicus, both of which presented common morphological characters, and both proved fatal to mice and rabbits when injected into the veins, and in most cases when injected subcutaneously.

Group two comprised the streptococcus erysipelatosus and streptococcus septopyemicus, which were also identical in morphological characters and growth; they developed less readily in the tissues of the human body, and were not so fatal to mice and rabbits.

In group three the streptococcus articulorum, which, when injected into the veins of rabbits, attacked the joints, setting up inflammation and producing usually a fatal result.

The following conditions with which streptococci were generally associated were indicated: In the anginas of scarlet fever, measles, and rheumatism they are almost invariably met with; in puerperal fever, in false membranes, in association with other organisms, such as the diphtheria bacillus, or the pyogenic staphylococci, in abscess and inflammatory processes, especially those connected with the buccal mucous membranes, in various forms of otitis, in peritonitis, often associated with the bacilli coli communis, and wherever superficial pus formation is met with, in furuncles, dermatitis, following or associated with fungi of various forms, pustular skin eruptions, erysipelas, and phlegmonous inflammations, especially those of badly-nourished patients, or in those in whom there is an interference with the removal of excretions, or where there is anemia, especially following hemorrhage.

It was evident from the wide distribution of the streptococcus under normal conditions, and from the great variety of the diseased processes with which it is found associated, that it must itself undergo great modification as regards its power of growing and of forming its special pus- or inflammation-producing products. That it is so frequently found associated with other organisms in widely different conditions that these modifications may well be due, in part at least to its symbiotic existence. That it produces, even when present in pus, say as a pure culture, such very different degrees of reaction when inoculated unto different species of animals, and animals in various states of health, that the state of the tissues themselves must play a most important part in determining the life-history and functional activity of the parasitic organism. It was known that even outside of the body a virulent streptococcus may rapidly lose its pathogenic power, and it is only by exercising the greatest care that this pathogenic activity can be exalted or even maintained. The exaltation of virulence that has been obtained from comparatively harmless streptococci by using Marmorek's methods was, however, so remarkable that the discrepancies observed by earlier workers at once become explicable, on the theory that the same organism might at difficult times adapt itself to a saprophytic mode

of life, on the one hand, or as the conditions under which it existed become gradually altered to a parasitic mode.

It was evident that during the saprophytic life the activity of the organism became diverted along lines most favorable to the reproduction of its species in large numbers, as the agents inimical to its existence were comparatively few and of different kind from those with which it had to contend during its parasitic existence. It led, therefore, what may be called a vegetative life, devoting its energies to reproduction and to withstanding the action of light and similar destructive agents.

During its parasitic existence, on the other hand, the organism was waging warfare for its very existence; in its new surroundings, with different food at its disposal, and contending against living cells, much of its vegetative activity was diverted to the production of substances which would exert a paralyzing effect on the living tissues. Thus living at a higher level it produced substances which in its merely vegetative existence it was incapable of producing. After living as a parasite, the streptococcus did not grow so easily outside the body, and, moreover, it was only after its toxin-producing powers were lowered that it could reproduce itself at the rate it did while living its purely vegetative life, and *vice versa.*

Cerebro-Spinal Meningitis.

Heubner (*Deutsche medicinische Wochenschrift*, July 2, 1896) states that the view which attributes epidemic cerebro-spinal fever to the pneumococcus is not satisfactory.

Weichselbaum found in one epidemic a special micro-organism occurring in twos and fours, lying with their broad sides opposed and not lanceolate. It was found chiefly within the cells; hence the name "meningococcus intracellularis." Heubner has had a child, aged 1½ years, in his clinic in which it was possible to demonstrate the presence of this micro organism both during life and after death. By spinal puncture, a sero-purulent fluid was obtained, and in the pus-cells a diplococcus or tetracoccus was found. This micro organism was then obtained in pure culture. The injection of the spinal fluid into the vertebral canal of guinea-pigs and rabbits gave negative results. In a young dog the result was doubtful, but in two goats a meningitis was developed, and the meningococcus was obtained from the exudation. Thus in susceptible animals, as in man, the meningococcus produces the same disease.

The author showed by injecting the pneumococcus obtained from a pleural effusion that the virulence of the meningococcus was less than the pneumococcus. This corresponds with clinical experience, which shows that a pneumococcus meningitis is rarely recovered from, the fatal result occurring in a few days. In epidemic cerebro-spinal meningitis, however, only one-third to one-half of those attacked die. The recognition of this form of meningitis by the help of spinal puncture is of great importance.

"Gonococcus" Pyemia.

Under this title (*Lancet*, August 15, 1896), a paper by Dr. E. Finger appeared in the *Wiener Wochenschrift*, 1896, p. 248. It is generally acknowledged that many complications of gonorrhea, such as arthritis, tenosynovitis, bursitis, periostitis, endocarditis, and pleuritis, are dependent upon the presence of gonococci, the organisms being carried from the point of local infection to distant parts. Yet it is not generally accepted as proved that the gonococcus rarely excites superficial

inflammation of the mucous membranes, the micro-organism acting far more frequently as an exciter of metastatic inflammation and suppuration in company with pyogenic cocci, streptococci, and staphylococci. Nevertheless, Shon and Schlaginhaufer have shown that the morbid processes produced by the gonococcus are not at all dissimilar in some respects to those caused by the pus-cocci. The behavior of the gonococci in and towards the affected tissues is, however, somewhat different from that of the pus-cocci, in that the latter rapidly permeate the tissues and cause rapid breaking down of the same, whilst the gonococcus is least active and takes only paths of least resistance through the fissures and lacunæ of the epithelium and connective tissue. Again the reaction of the tissues is somewhat different. The inflammation caused by the gonococcus is entirely purulent; the formation of granulation tissue is early and abundant. All facts go to show that the gonorrheic process tends to the formation of connective tissue and scars,—in the urethra as stricture, in the prostate as destruction of the gland, in the suprarenals as thickening of the organs, and in the joints as ankylosis. Finally, the gonococcus is destroyed when exposed to a temperature of 103° or 104° F. for several hours, whilst the pus-cocci are far less susceptible to such a temperature. From these considerations it follows, as has been already known clinically, that the gonococcus is less energetic in its action and is more easily destroyed than the pus-cocci, and that the lesions produced by the former tend to run towards recovery more readily than those produced by the latter.

MISCELLANEOUS.

ERRATA.

THE proof of Dr. Thomson's article in the November issue having been accidentally delayed until the MAGAZINE had been printed, the author has requested us to publish the following corrections:

(1) The paper was read before the Academy of Railway Surgeons, Chicago, September 23, 1896.

(2) Page 102, the twenty-third line should read, "these signs being associated with pain," etc.

(3) Page 102, tenth line from the bottom, "inflammation pains" should read inflammation, pain, etc.

(4) Page 103, seventeenth line from the bottom, "Orio" should be Ovio, of Padua.

(5) Page 103, fifth line from the bottom, "not" should be omitted; the phrase should read, inflammation is produced by chemical action.

(6) Page 105, eighteenth line from the bottom, "accommodation, weakness," should read accommodative weakness.

(7) Page 105, fourteenth line from bottom, should read, "It has been known as early as two weeks and as late as forty years after injury."

(8) Page 106, twenty-second line from the bottom, "1 : 100" should be 1 : 1000.

(9) Page 107, seventeenth and eighteenth lines from the top, "some antiseptic" should read bichloride of mercury.

(10) Page 107, twentieth line from the top, strike out "etc." The sentence should read, Pain should be treated.

BOOK NOTICES.

A System of Surgery. Edited by Frederick Treves, F.R.C.S. Philadelphia: Lea Brothers & Co. Vol. II. 1896.

The second and final volume of this "System of Surgery" is, perhaps, better than its predecessor in that there are more noteworthy single articles, although the general level of both volumes is very uniform. Condensation, avoidance of theoretical speculation, practical teaching are the merits which give the book its value. In most directions it is well brought up to date; in but very few are there regrettable omissions.

Mr. Herbert Page, in his article on "Concussion of the Spine," makes some remarks, which we commend to the notice of those practitioners, becoming too numerous with us, who may be found almost daily in the law courts testifying usually to the injuries received by a plaintiff, a wealthy corporation being the defendant.

"In this article it is not intended to bring forward the evidence, which is conclusive, and which may be found elsewhere, as to the absence of intraspinal injury in the vast majority of cases where there is complaint of spinal pain. It must suffice to remind the reader of the fact that the physical relations of the spinal cord and the bony canal in which it lies are wholly different from those of the brain and skull, and that they do unquestionably protect the cord from the injurious effect of blows on the back, such as, were they to fall upon the head, would be likely to cause concussion of the brain. It may, indeed, be said at once that concussion of the spinal cord is one of the very rarest of injuries, and that, as the writer has shown in another place, railway collisions are not especially prone to provide examples of it." . . . "The spinal injury from a railway collision, as the mode of occurrence and the symptoms alike show, is, in the great majority of cases, a simple sprain of extraspinal structures; of the muscles which, running from one part of the column to another,

bring about the movements of which the spine is capable, the ligaments which bind its various parts together, and the fasciæ which embrace the whole."

Mr. Bennett, in the article on "Diseases of the Spine," formulates as follows his views as to the indications for laminectomy: "For exploratory purposes it is indicated when symptoms of pressure on the spinal cord from any cause are, although not sufficiently distinct to make a positive diagnosis possible, sufficiently suggestive to justify some risk being run, in order to ascertain their cause with a view to its removal.

"As a curative measure, it is applicable in undoubted tumors inside the canal, and in progressive or stationary paraplegia in caries, presumably due to pressure, and not to secondary changes in the cord. When symptoms of advanced changes in the cord from acute or chronic myelitis are present, laminectomy is useless and unjustifiable. The operation is in itself severe, and entails some immediate risk to life. It should, therefore, only be performed when the chances of good resulting are in excess of the risk to life involved in its performance."

Mr. Pitts, in the article on "Diseases and Injuries of the Neck," remarks of intubation that when employed as a substitute for tracheotomy in diphtheritic laryngitis, intubation has in England few advocates, but has in a great measure superseded tracheotomy in America and some parts of Europe. He speaks of "O'Dyer's" intubation tubes; the article shows some want of familiarity with their practical use.

As to the use of antitoxin he anticipates through its use a reduction of the mortality of diphtheria cases to 20 per cent., adding that the deaths which occur are mainly due either to the late period at which the patients come under treatment, or to the supervention of lung-disease over which the serum has no control.

The teachings of the editor, Mr. Treves, as to peritonitis, are among the most valuable contributions to this volume, and the few sentences in which he sums up his conclusions in regard to appendicitis should be impressed on the mind of every over-anxious medical man. As the views of one of the leading specialists in all forms of intestinal surgery and the earliest operator in Great Britain in this particular disease, they are worthy of all attention.

"The great majority of the cases of perityphlitis call for no operative treatment. In the ultra acute cases it is well that the abdomen be opened at once in the cecal region, and the case considered and dealt with as one of perforative peritonitis. Such cases are very uncommon. When the evidences of abscess are present, an incision should be made into the collection as soon as possible. The cut should be made over the most prominent part of the swelling. A convenient situation for the incision in most cases (and in all doubtful cases) is represented by a point about one and a half inches to the inner side of the anterior superior iliac spine. This incision should be about parallel to Poupart's ligament.

"The abscess should be opened and drained. It should not be scraped, and it is of no avail to make search for the appendix. To

excise an appendix by a plastic operation when it is situated at the bottom of a foul abscess is not in conformity with surgical principles. A gangrenous appendix, if met with, may be snipped off, and if a perforated appendix actually presents itself it may be ligatured and cut away. As a matter of fact, after an abscess has once formed, very little more is heard of the appendix. These abscesses are apt to degenerate into fistulæ and somtimes into fecal fistulæ. They exhibit, however, a strong tendency to close spontaneously in time.

"An incision in perityphlitis is very seldom called for before the fifth day. The wound made is not frequently followed by a ventral hernia."

His remarks on the radical operations for hernia are equally worthy of reproduction.

"The danger of the operation when carried out in non-strangulated cases is very slight, and may be estimated as not above 2 per cent. Among the records of 767 cases by well-known surgeons there are noted only five deaths.

"The prospects of success after treatment by operation are not so easily defined. It has not been shown that any one method can lay claim to especial superiority. To judge from published reports, very admirable results have been obtained at the hands of the inventing surgeons by every procedure which has been brought before the profession. Almost every writer upon the radical cure of hernia has his own method, and with it he obtains satisfactory results. As there seems to be so little need of selection in the method employed, the choice of the surgeon would probably incline towards that operation which is the most simple, the most free from special apparatus, and the most likely to be attended by sound and speedy healing.

"On reviewing the recorded cases of six writers upon the radical cure of hernia, it would appear that the number of failures is only in the proportion of 4 per cent. Were this the case the operation would merit the term of radical cure. Unfortunately, however, cases are lost sight of. Patients who have suffered a relapse are apt not to return to the surgeon whom they consider to have failed. Most of the successful cases are recorded, and most of the unsuccessful are allowed to escape the prominence of publication; in many instances the rupture ceases to trouble the patient for some years, and then makes a reappearance too late to be recorded. These circumstances may serve to explain the fact that the number of cases of relapse after operation met with at odd times in hospital practice are certainly suggestive of a higher ratio of failures than 4 per cent. Bull estimates that failure follows in 30 per cent. of the usual operations for radical cure taken collectively. In advising a patient it would probably be more nearly accurate to assure him that the prospects of a recurrence of the hernia after operation would be represented by a proportion of 15 per cent., but that he may expect, in any case, to be free for some years after the operation from any hernial protrusion."

Mr. Henry Morris, in the article on "Injuries and Diseases of the Prostate," expresses a general want of confidence in attempts at radical cure of prostatic hypertrophy. He thinks prostatectomy has failed much oftener than it has succeeded, and believes that castra-

tion, for the introduction of which he gives due credit to Dr. White, of Philadelphia, is too recent to be given its final position.

The temptation to quote from many more of the admirable articles the volume contains must be resisted for lack of space, but we have given enough to indicate our estimate of its great value to both the medical practitioner and the surgeon.

A System of Surgery. By American Authors. Edited by Frederic S. Dennis, M.D., Professor of the Principles and Practice of Surgery, Bellevue Hospital Medical College, New York; President of the American Surgical Association, etc., assisted by John S. Billings, M.D., LL.D., D.C.L., Deputy Surgeon-General, United States Army. Complete in four imperial octavo volumes. Vol. iv. Philadelphia: Lea Brothers & Co., 1896.

The present volume completes this valuable work on surgery, the previous numbers of which we have had the pleasure of noticing in these pages.

The first contribution is that on tumors by Dr. Dennis, the subject being fully and satisfactorily considered. The exhaustive and rational classification adopted has been prepared by Dr. J. W. S. Gouley, and is published in advance by his permission. Six pages are devoted to the consideration of the treatment of inoperable cases of sarcoma and carcinoma by the injection of the toxines of the streptococcus of erysipelas and the bacillus prodigiosus, as advised and practised in a large number of cases by Dr. Coley. This method, which so far has proven more successful in the hands of Coley than others, Dr. Dennis says "is yet too immature, the technique too little understood, and the cases not long enough under observation to express an exact opinion as to its merits. Without doubt this method of treatment has much value, and time only can decide the position which the profession will assign to this plan of treatment. At all events, the almost miraculous results which have been obtained in some cases of inoperable sarcoma justify the means, and offer to the profession sufficient encouragement to investigate still further this unique method." The treatment of malignant tumors is undoubtedly one of the most important questions before the surgical profession to-day, and while operative interference, as the author truly says, yields the most satisfactory results, a great load will be lifted from surgeons when some means shall have been devised for successfully treating those cases that are clearly inappropriate for operation.

The next section is by Dr. Dunham, and is devoted to the microscopic structure of tumors. The author describes the fixing and hardening of tissues which the surgeon is frequently called upon to do, as the structure rapidly alters after removal from the body, and therefore immediate immersion in appropriate fluids is necessary to secure good results. The microscopic appearance of the various tumors and a brief description of each follow.

The subject of hernia has been well presented by Drs. Bull and Coley. In the cases of inguinal hernia that are appropriate for an

attempt at radical cure the method of Bassini is advised. The same surgeon's method for the radical cure of femoral hernia is also given. Bassini has reported fifty-four cases of femoral hernia operated upon by his method without a death, and forty-one of these traced from two to nine years afterwards did not show a single relapse.

The surgery of the alimentary canal from the pharynx to the ileo-cecal valve is described by Dr. Richardson, assisted by Dr. Cobb. This is one of the best chapters in the book, and in fact it would be difficult to find a more complete and modern exposition of the subject in any general surgical work.

The general consideration of appendicitis is by Dr. Hartley, and its surgical treatment by Dr. McBurney. We have perhaps no higher authority on this subject than Dr. McBurney, and his statements therefore demand respectful consideration. He describes the surgical treatment of appendicitis under two heads, the palliative and the operative or radical.

"The palliative treatment," he says, "is to be applied to all cases of acute appendicitis in their incipient stage, excepting when they are characterized by such violent symptoms at the very onset that operation is immediately called for." This is, we think, in accord with the views of those sober-minded surgeons whose experience, impartial study, and professional standing render their judgment worthy of acceptance by the profession. Dr. McBurney, in speaking of acute appendicitis further on, states, that "if by the end of thirty-six hours from the beginning of the attack there are no well-marked signs of the abatement of the disease, operation is usually indicated," while this advice may be called radical, it may also be considered conservative and rational, for, as the author says, "if no operation is done, the patient will either temporarily recover with the strong probability of the recurrence of the disease, or an abscess will form which will be opened after a more or less dangerous illness, or some accident, such as the rupture of an abscess will occur, and the patient will almost certainly die." The technique of the operation in the different stages of appendicitis is given with the fulness that comes from a large experience. In speaking of those cases in which an abscess is present, the author states that, "In some cases it is undoubtedly safer and wiser to leave the appendix rather than to insist on a dangerous and prolonged dissection," for, while, as is observed in the following sentence, the portion of appendix remaining may in a few cases give rise to a subsequent attack or induce a chronic fistula, the life of the patient is the first consideration, and a second operation, if required, can be done at a favorable time. The medical common sense and surgical soundness of this advice is worthy of its distinguished author.

The surgery of the alimentary canal from the ileo-cecal valve to the anus, by Dr. Pilcher, is a very full and satisfactory exposition of the subject.

Dr. Abbe has contributed an excellent chapter on the surgery of the liver and biliary passages. The author's large experience in this line of work has enabled him to speak from personal observation, which gives additional weight to his statements.

The section devoted to surgical gynecology has been placed in

excellent hands. Dr. Polk contributed that portion referring to surgical disorders and diseases of the uterus ; Dr. Johnson, the surgical diseases of the ovaries and tubes ; Dr. Coe, minor gynecological surgery ; and Dr. Lusk, the section of symphyseotomy. All are well-known writers in this field of medicine, and their contributions represent the best thought on the respective subjects.

The surgery of the thyroid gland has assumed such an importance within recent years that a special section has been devoted to its consideration. The authors are Drs. Weir and Foote. The subject of goitre is fully discussed. Thyroid feeding and the use of the thyroid extract are described. Four methods of operative treatment are given,—namely, partial resection, enucleation-resection, enucleation, and ligature of the thyroid arteries.

The surgical peculiarities of the negro are described by Dr. Matas in an interesting and well-illustrated chapter of thirty pages.

The diseases of the female breast are described by Dr. Dennis. A chapter on the use of the Röntgen X-Rays in Surgery, by Dr. Keen, completes the volume.

The work as indicated comprises four volumes, containing 3652 pages, 1585 engravings, and 45 full-page plates in black and colors.

As a whole, it is a production reflecting much credit upon American surgery, and upon the editors and authors particularly.

The publishers have more than maintained their well-known standard of excellence in book-making.

Hare's Practical Diagnosis : The Use of Symptoms in the Diagnosis of Disease. By Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia ; Laureate of the Medical Society of London, of the Royal Academy in Belgium, etc. Philadelphia and New York : Lea Brothers & Co., 1896.

The author has produced a readable book, which interests and fixes the attention, but after the reading one searches his memory in vain for "pegs on which to hang his ideas."

It is stated in the preface that "the book is written on a plan quite the reverse of that commonly followed." This is undoubtedly true, but the new plan is not a good one. Our friends, the homeopathists, are said to believe that a diagnosis is unnecessary ; all that is desirable is a careful attention to the symptoms and a treatment according to the symptoms.

After careful reading of this book one is apt to think that the author is tainted with this view, and believes that a diagnosis can be made from symptoms alone. For instance, there are chapters on "The Hand and Arm," "Feet and Legs," "The Skin," "The Eye," etc. In these various chapters he takes up the symptoms which occur and states from what they may be caused, with very few attempts to differentiate them.

The following paragraph, taken from page 143, on the "Tongue,

Mouth, and Pharynx," will best illustrate the tendency of the book: "If a patient presents himself to the physician with the statement that he is suffering from general pains all over the body, particularly in the small of the back, quite high fever it may be, with much sore throat and difficulty of swallowing, the trouble in the majority of cases will be, in the adult, tonsillitis of the follicular form." He then goes on to differentiate this condition from diphtheria and scarlet fever, but does not speak of any rash in the latter. What is above stated may be true, but what terrible mistakes could be made by an acceptance of the dictum that such cases mean follicular tonsillitis, without a careful general examination of the patient.

The only possible way to make an accurate diagnosis is to first take a careful history of the case under consideration and then make a systematic physical examination of all the organs. A careful comparison of the symptoms with the physical signs will usually lead to a correct conclusion. There is no method presented in this book by which it will be possible to make any diagnosis whatever. The symptoms found in different parts of the body are discussed and their causes but remotely touched upon.

It is to be presumed it would be possible to so arrange symptoms in an analytical key after the style of the key in a botany, and from that trace the disease. If it were possible, how fatal it would be to scientific medicine. It appears to the reviewer that the attempt here is just as fatal to correct understanding of medical diagnosis.

As to the matter in the book. There are some forty cuts without credit. It is, of course, probable that many of these are original, but when one examines the cuts on pages 119 and 302 and recognizes them as old friends from Gray used without credit, suspicion is cast upon all cuts which are not credited.

Page 45 states that in wry-neck "the muscle is involved on the side *toward* which the head is drawn, whereas the muscle on the opposite side is seen tense from being stretched by its fellow." This is, of course, an error, and will doubtless be corrected in the next edition.

McClellan, on page 198, states that the action of the sterno-mastoid muscle draws the head obliquely towards the opposite shoulder. In addition, in congenital wry neck the muscle is *atrophied* and short, and is not, as stated in the text, in a state of spasm.

On page 67 unilateral wrist-drop is said to be due to pressure from sleeping with the head resting on the arm, or from pressure by a crutch. All other sources of pressure are overlooked.

On page 133 the strawberry tongue is described as covered with a white fur, through which the prominent papillæ protrude. This is certainly not the strawberry tongue meant by the originator of the name. The strawberry tongue is the appearance after the lingual epithelium has been all cast off and the prominent papillæ are seen on the *red* surface. No one ever saw a white strawberry with *red* pits. (See Flint, 1008.)

On page 289 the area for the tricuspid regurgitant murmur is entirely too far to the right. The same is seen on page 291.

On page 413 the remarkable statement is made that the author

saw five cases of enteric fever without rise of temperature during one term of service in a hospital. He fails to state the diagnostic points.

On page 254 it is stated that "any cause which interferes with the patient receiving a full amount of air causes rapid breathing," and immediately below the text reads, "The respirations are slowed or decreased in number by great obstruction to the current of air into the lungs from any cause."

Many of these mistakes are, of course, easily corrected, but the unfortunate fact remains that a book has been written which magnifies symptoms at the expense of physical signs. If the book is largely read it will perhaps increase the wide-spread and pernicious habit of making a diagnosis on the symptoms alone, and a failure to examine the patient. If the matter were rearranged and a systematic study of the different organs made, the book would be acceptable.

Minor Surgery and Bandaging. By Henry R. Wharton, M.D., Demonstrator of Surgery in the University of Pennsylvania. New (third) edition. In one 12mo volume of 594 pages, with 475 engravings, many being photographic. Philadelphia: Lea Brothers & Co., 1896.

The above work on minor surgery, now in its third edition, is one that the student will find most helpful to him in the pursuance of his studies in this particular branch. Not only should it prove of value to the student, but also to the hospital resident and other recent graduates who have not yet familiarized themselves with the performance of many minor surgical procedures.

This edition has been revised, and to it certain additions have been made in order to render it of assistance to students in the operative courses on the cadaver that now form a part of the curriculum in our medical schools.

Part I, devoted to bandaging, demonstrates very clearly, with the aid of numerous engravings, the exact application of the various bandages. To the list of bandages appearing in the last edition the author has added a number of handkerchief bandages, which are especially useful in emergency cases, where the roller bandage may not be at hand. The making, application, and removal of plaster-of-Paris bandges is included in this section.

Part II treats particularly of minor surgery. It includes a thorough description of the preparation of all materials and solutions necessary in the performance of operations.

It carries the student through the procedure of an operation from beginning to end, from the preparation of the patient to the application of the dressing at the completion of the operation.

Reference made to the use of the double cyanide of mercury and zinc gauze, by Dr. J. William White, might have been omitted in this edition, as Dr. White, for various reasons, discontinued using it several years since.

In the paragraph on artificial respiration, Laborde's method, that if rhythmical traction of the tongue has been introduced in this edi-

tion. Under hypodermic injections the author has also introduced a description of the administration of antitoxin injections in diphtheria.

Since the use of the urethroscope and cystoscope, more especially the latter, is becoming daily of greater importance as an aid to an accurate diagnosis and treatment of genito-urinary affections, the author wisely inserts in this edition a description of these instruments.

Among the other procedures described are venesection, strapping, irrigation, poulticing, blistering, cupping, controlling of hemorrhage, and transfusion of blood.

Part III. In the preface to this section we read that the author "has endeavored to confine himself to a description of the various fractures and to their dressing and treatment, and has tried, as far as possible, to avoid the multiplication of dressings, being satisfied to describe a few of the methods of dressing most frequently employed." This idea has been carefully carried out not only with regard to fractures, but to dislocations as well.

The chapters on ligation and amputation, which follow, have not been materially changed.

The book concludes with Part IV, which contains instruction in some of the greater operative procedures, such as resections, excisions, trephining, operations on nerves and tendons, tracheotomy, intubation, operations on the kidney and colon, lithotomy, and osteotomy. Practically all this material has been introduced into this edition, particularly, the author states, as an aid to the student taking an operative course on the cadaver.

The manual, though thoroughly elementary, fully answers the purpose for which it was written; the subject-matter is concisely and clearly expressed while the pages throughout are replete with excellent engravings, profusely illustrating the subject of the text. It should prove of material assistance and indispensable to the student seeking to master the subject of its contents.

Voice-Building and Tone-Placing. Showing a New Method of Relieving Injured Vocal Cords by Tone Exercises. By H. Holbrook Curtis, Ph.B., M.D., Fellow of the New York Academy of Medicine, etc., New York: D. Appleton & Co., 1896.

Under the above title we have one more added to the already bewildering number of so-called "methods" for the cultivation of the singing voice. To be sure, a subtitle announces this as being merely "a method for relieving injured vocal cords by tone exercises," but while all that is of value in the book for this latter purpose could easily have been condensed upon a page or two, the author hammers his little grain of gold so assiduously that he makes it cover upward of two hundred. The work is addressed to the physician and to the teacher and student of vocal culture, but the first two of these will find very little in it in the nature of news. It contains an astonishing amount of padding. Before reaching the questions which seem to have inspired the writing of the book, one is delayed by too much that is trite.

An irrelevant chapter on the origin of music, two more that deal with the anatomy and physiology of the larynx and of respiration, and yet another two upon the vocal resonators and tones and overtones, all these may be profitably read by the young vocal student, perhaps, but by the medical specialist and any properly-equipped singing-master, may be profitably skipped. In the succeeding two chapters, however, we finally unearth the *raison d'être*, of the volume. It is in the discussion that occurs at this point of the registers of the singing voice and of tone-placing that the author suddenly appears in full war-paint and applies himself to the scalping of that relentless foe to vocal cords,—the "coup de glotte." Dr. Curtis seems to attribute to this mode of tone-attack about all the ills that the singer's larynx is heir to. This discovery of his has been the result of "a vast experience with singers, and we are incidentally informed that he possesses the confidence of the de Reszkes, of Melba, of Plancon, and of we don't know how many others. This is all very edifying and reassuring, and ought to strongly prejudice one in favor of the doctor's theory, but, nevertheless, we venture to check ourselves upon the brink of acceptance, as it were, and indulge in a moment's calm reflection. We take it as a matter of course that the laryngologist and the competent instructor in vocal culture are both perfectly familiar with the commonly recognized divisions of the singing voice into registers, and with the variations in the "placing" of the voice which each involves. The very first task to which the judicious teacher addresses himself in the building of a new voice is this matter of getting it well set. This should be at the foundation of all methods, however they may differ in matters of detail. But, with the vast majority of pupils, what an enormous amount of patience and perseverance and dogged determination it takes to get the voice throughout its whole compass in the right place! Once there, however, we doubt if any mode of attack, used within reasonable limits, will injure it. If the vibrating column of air is directed aright and properly moulded into articulate sound, it matters little whether the cords are exercised upon *ah* or *oh* with the stroke of the glottis, or upon the magical "*maw*" with which Dr. Curtis assures us he accomplishes wonders. Such a voice, we believe, is effectually protected against all future injuries, except, of course, those due to actual overwork. We are quite aware of the rarity with which such voices are encountered, but is it not in this very fact that the whole source of trouble is hidden? We must go deeper than the "coup de glotte," if we would reach and pluck up the root of the evil. It has not required a vast experience to convince a large number of excellent throat specialists and musicians that the reason that so many singers' throats are a constant source of annoyance to them, is that so few of them know how to sing. The average pupil of to-day is determined to traverse in a few months the ground over which the illustrious Italian singers of a few generations back spent years in passing. Voice-building then was recognized as a process that would not admit of hurry, but now "*nous avons changé tout cela!*" Voices are turned out nowadays underdeveloped, unplaced, the cords unseasoned by long-continued and gradually-increased exercise, and it requires very little

foresight to predict the fate of such unfledged song-birds. They are heard a few times in light opera or concert, or in the drawing-room, and then their careers begin to be chequered by visits to the doctor's office. If, happily for them, the doctor chances to be both wise and conscientious, he will refrain from sprays, insufflations, lozenges, and the like, and simply order them back to school. The directions and exercises for restoring injured cords that occupy some thirty or more pages of Dr. Curtis's book, are similar to those that have been in use by intelligent teachers from time out of mind. We find nothing novel in his suggestions, nothing that is going to revolutionize the study of "the divine art," or make it one whit the easier. We confess to being disappointed. We had hoped that Jean and his other friends of the Metropolitan Opera would have let the author into some valuable secrets concerning the manner of cultivation of their own delectable voices, but all that he seems to have extracted from them is this pithy utterance of the elder de Reszke, "The grand question of singing has become a question of the nose!" As an epigram this is quite stunning, but we had promised ourselves something more tangible and satisfying. However, the book is attractively bound, it contains a number of pretty pictures, and it would make a highly appropriate Christmas or birthday gift for some young Maurel or Melba of the distant and elusive future.

The Medical News Visiting List for 1897. Weekly (dated, for 30 patients); Monthly (undated, for 120 patients per month); Perpetual (undated, for 30 patients weekly per year); and Perpetual (undated, for 60 patients weekly per year). Philadelphia and New York: Lea Brothers & Co.

This work is so favorably known that more than an announcement of a new edition seems superfluous. The volume for 1897 shows evidence of a thorough revision. The text portion (thirty-two pages) contains useful data for the physician and surgeon, including an alphabetical table of diseases, with the most approved remedies, and a table of doses. It also contains sections on examination of urine, artificial respiration, incompatibles, poisons and antidotes, diagnostic table of eruptive fevers, and the ligation of arteries. When desired, a ready-reference-thumb-letter index is furnished. In its several styles the "Medical News Visiting List" adapts itself to any system of keeping professional accounts. The mechanical execution of the book is in keeping with the high standard maintained by this firm.

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JANUARY, 1897.

SKIAGRAPHY IN THE DIAGNOSIS OF AORTIC ANEURISM.[1]

By William Pepper, M.D., LL.D.,
Philadelphia.

I wish to call your attention to the diagnostic value of Röntgen rays in internal medicine. To-day I shall limit myself to their use in the diagnosis of intrathoracic aneurism. You will find that in many cases this new agent serves only to confirm a diagnosis which has been already established with great confidence by auscultation and percussion. Even in these cases we may hope for greater precision as to location and size and form. In other cases, however, an intrathoracic aneurism of such small size, or so situated as to cause but few symptoms, and not susceptible of diagnosis by ordinary methods, may be demonstrated by the X-rays. Lastly, there are cases where symptoms strongly suggestive of aneurism are present, and the gravest anxiety must be entertained since clear diagnosis by exclusion may be impossible, and yet the employment of the X-rays may be of positive value as failing to reveal any increase in the shaded form of the heart and aorta.

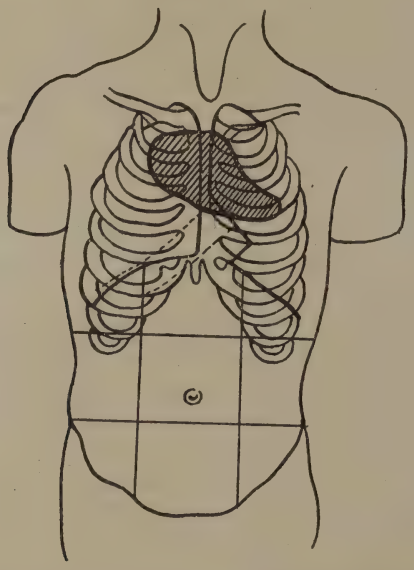
In three cases of suspected aneurism of the arch of the aorta under treatment in the University Hospital, most careful attempts have been made to obtain negatives of the thorax by means of the X-rays. The photographic work was done in the William Pepper Clinical Laboratory by Dr. Charles Lester Leonard, an associate in

[1] Read before the Second Pan-American Medical Congress, City of Mexico, November 17, 1896.

the Laboratory, to whose skill a great deal of credit is due for the success of the undertaking. I am glad to take this opportunity of expressing our thanks to Professor Edwin J. Houston and Mr. A. E. Kennelly, for valuable assistance, as well as for the generous loan of necessary apparatus. I may add that recently Dr. Leonard has succeeded in demonstrating, to our satisfaction, what seems to be a new physical property of the X rays. This discovery will be announced immediately in proper manner. It has, perhaps, aided him in obtaining large negatives of the thorax with unusual clearness, and with unusually brief periods of exposure. The three cases will be presented *seriatim.*

Case I.—Edwin Tallman, white, aged 40 years, laborer. Family

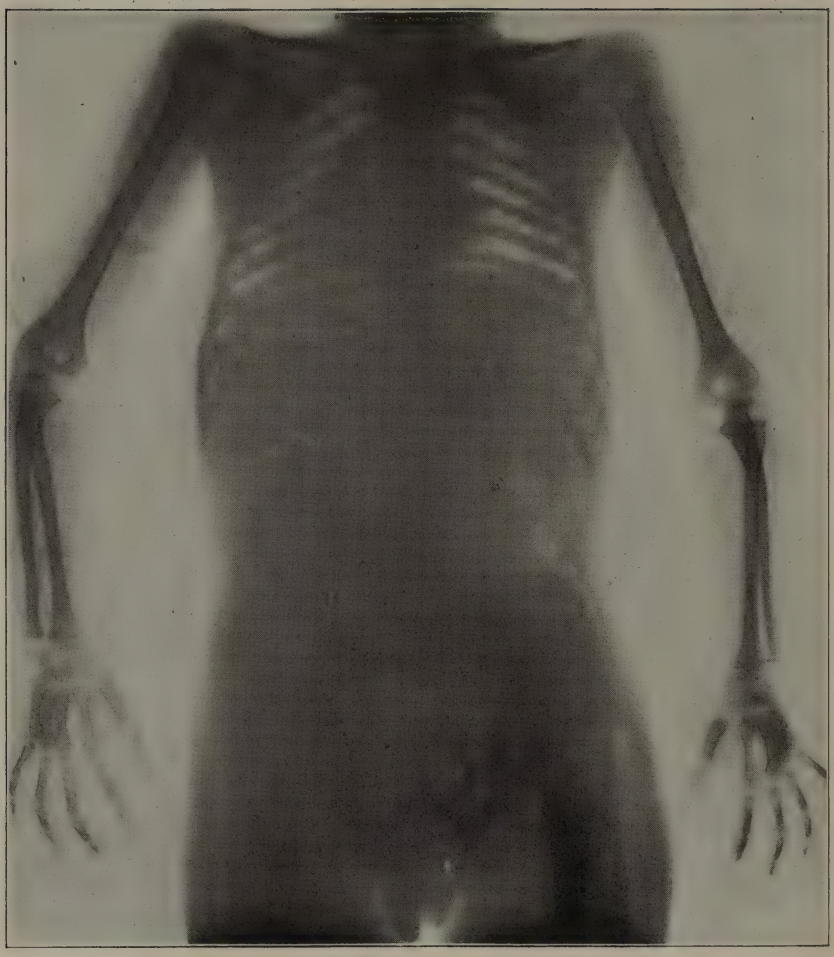
Fig. 1.



history negative; personal history negative; denies alcoholic excesses; denies gonorrheal or syphilitic infection. One year ago he had a popliteal aneurism, which was successfully treated by double ligation and excision of the sack. Seven weeks before admission he "caught a cold" and his throat was much inflamed; he says, however, that his cough had the natural sound. One week before admission he began to have a choking feeling in the chest, with dyspnea and headache.

Upon admission the patient was quite short of breath; he lay upon his left side. Placed upon his back or upon the right side a violent inspiratory dyspnea and a gasping cough were produced. Few signs were elicited by inspection. The respiratory movements

Skiagraph of Case I.



Skiagraph of Case II.

were greater upon the right side, the left side of the face was swollen, the left pupil was contracted. There was an old scar over the right scapula. Upon palpation fremitus was diminished over the left chest. Over the upper sternal region was a strong pulsation, most marked to the right of the sternum, and a faint thrill. Distinct tracheal tugging was present. The radial and femoral pulses were synchronous. Percussion furnished positive signs. The heart-dulness extended from the third interspace outside the left nipple transversely to the sternum and up to the second costo-sternal junction. The upper part of the sternum was dull, and this dulness extended one inch to the right of the margin of the bone. (Fig. 1.)

Upon auscultation the breath-sounds over the right lung were exaggerated, over the left lung the breath-sounds and vocal resonance were diminished. At the apex the first sound was rough, the second sound reduplicated. Over the base of the heart a loud, harsh, systolic murmur was heard, audible over the entire upper chest, loudest at the aortic area and one inch to the right of it. The second sound was accentuated. The systolic murmur and the accentuated second sound were audible in the midscapular region.

Laryngological examination revealed the left vocal cord motionless during inspiration. During the following week the voice became huskier, the breathing more labored, the breath-sounds upon the left side more faint; the left face became markedly swollen.

At no time were chest pains more than moderate. A partial dysphagia next appeared: the swallowing was difficult, but could be accomplished by forceful efforts.

Urine: 1019; acid; no albumin; no sugar; no casts; normal on repeated examinations.

Blood: hemoglobin, 80 per cent.; red cells, 4,860,000; leucocytes, 7300. Differential count of leucocytes:

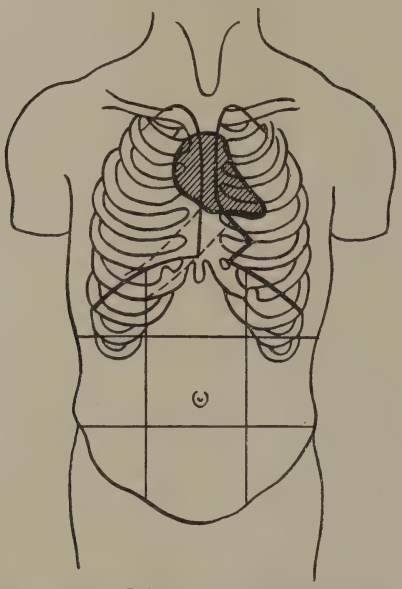
Polymorphous leucocytes	79.0	per cent.
Oxyphilic leucocytes	2.5	" "
Mononuclear leucocytes	9.5	" "
Lymphocytes	9.0	" "

The skiagraph was taken with the patient lying upon the plate. The double cathode focussing X-ray tube was placed directly over the median line of the chest, at a distance of eighteen inches from the plate. The exposure was fifteen minutes. An impenetrable area is seen in the upper sternal region, above and to the right of the heart's shadow. The indefiniteness of the picture is unavoidable, as a longer exposure would have penetrated the aneurism completely and no shadow would have been shown.

Case II.—Male, white, aged 52 years. Family history negative; personal history negative; denies syphilitic infection; uses no alcohol; chews tobacco. He dates his trouble to an attack of influenza in December, 1895. About the middle of July he consulted a physician for cardiac distress and dyspnea. When first examined, upon August 1, the conditions were as follows:

Upon inspection the ribs and sternum appeared prominent; the veins over upper chest and the diaphragmatic veins were distended, the vessels at the base of the jugular fossæ pulsated abnormally. The pupils were normal. Upon palpation the vocal fremitus was increased over right apex, but weak elsewhere. A thrill was felt at the apex, and an abnormal pulsation was felt in the second interspace

Fig. 2.



to the right of the sternum. The pulses were synchronous and equal. There was a suggestion of tracheal tugging. Upon percussion an area of dulness was found in the right apex, elsewhere the note was rather high. The cardiac dulness extended from the midsternum to the nipple line in the fourth interspace, and extended from thence to the juncture of the second rib with the sternum. From here, however, an abnormal area of dulness extended upward beneath the manubrium and to the right one inch beyond the sternal margin.

Upon auscultation both lungs were found filled with dry râles, the breath-sounds were weak in general, but particularly over the entire left lung. In the right apex there was increased vocal reso-

nance and prolonged expiratory murmur. The first mitral sound was loud and split; over the area of dulness to the right side of the sternum there was a systolic murmur, the second aortic sound was accentuated.

Urine: 1021; acid; no albumin; no sugar; no casts; normal on repeated examinations.

Blood: hemoglobin, 52.5; red cells, 3,960,000; leucocytes, 7240. The oligocythemia was the result of an attack of malaria of the quotidian type, with a double set of tertian hematozoa in the blood.

Differential count of leucocytes:

Polymorphous leucocytes	54.2 per cent.
Oxyphilic leucocytes	1.2 " "
Mononuclear leucocytes	17.0 " "
Lymphocytes	27.6 " "

Under treatment the râles cleared up somewhat; but the breathing of the left lung remained weaker than the right; the right apex also cleared up. His dyspnea decreased, and he became able to lie upon the left side which was at first impossible. Later the sternal pulsation became more marked, and still later a distinct diastolic shock came to follow the pulsation. The right pulse has gradually lost some of its force and volume. The area of dulness has increased and an area has become demonstrable by percussion posteriorly.

The dulness posteriorly was not found or noted until after the Röntgen picture was developed and showed an extension of the aneurism to the left. (Figs. 2 and 3.)

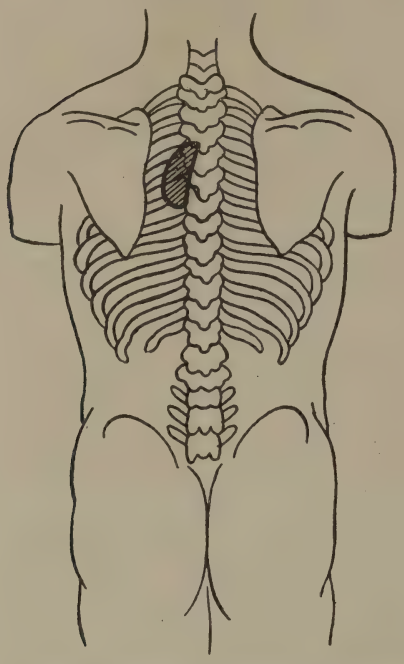
The skiagraph of this shows clearly an area of darkness rather larger than that obtained by percussion, particularly to the left.

Case III.—Male, white, 52 years of age. Family history negative; negative personal history; denies syphilis. In December, 1894, he had an attack of influenza; in January, 1895, he caught a severe cold, and had aphonia. For some time later this persisted, but gradually his voice returned, yet only to the extent of a hoarse whisper.

Upon admission to the hospital, in December, 1895, the condition was as follows: He had a loud, barking cough, and spoke in a hoarse whisper. There were no signs on inspection. There were no abnormal signs on palpation; the pulses were equal; there was no tracheal tugging, no abnormal pulsation or thrill. Upon percussion with the patient leaning well forward there was abnormal dulness beneath the manubrium. Upon auscultation no murmurs were audible, the second aortic sound was accentuated. The laryngeal examination revealed paralysis of the left vocal cord. The patient had

no cardiac distress. As time passed on the dulness became more extensive and extended an inch to the right of the sternal margin. Murmurs appeared in the right and left subclavian regions, and were much increased by having the patient throw his shoulders well back. The right pupil became distinctly wider than the left, this being decidedly more marked at some times than at others, so that while the right pupil was often wider than the left, at times they were equal. Tracheal tugging was also developed and the patient began to suffer with slight precordial pain. Later the left pulse became weaker than the right. The first sound at the base and under the

FIG. 3.



manubrium became murmurish and later a distinct systolic murmur developed there, while in the suprasternal notch appeared a puffing systolic murmur, with marked accentuation of the second sound. The right pulse then became weaker than the left. Later the conditions were again reversed, and the left pulse became weaker. The patient suffered from frequent attacks of depression with mental confusion. A swelling formed in the right elbow, which was opened and curetted, presenting the appearances of tuberculous joint-disease. Some of the pus and necrotic tissue was examined microscopically, but no tubercle bacilli were detected. He later suffered from

Skiagraph of Case IV.

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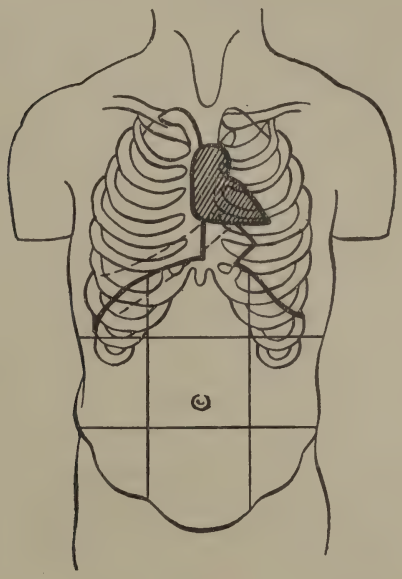
severe attacks of epigastric pains, but no signs could be made out there except local tenderness. The murmur at the manubrium then disappeared and the tracheal tugging became much diminished. The dulness and the paralysis of the vocal cord have not changed. Still later the pupils were found equal again. Throughout the ten months he has been under observation the fluctuation of the physical signs has been marked, but the evidences of aneurism have never been distinct.

Urine: 1022; acid; no albumin; no sugar; no casts; excess of amorphous urates. Blood: normal. (Fig. 4.)

In this case repeated attempts with the X-rays apparatus have

FIG. 4.



failed to bring out any area of opacity corresponding to the dulness upon percussion. Whether the chest lesion and the tuberculosis of the elbow could have had any relations remains a matter of conjecture; nor do I know whether tuberculous enlargement of the mediastinal glands would be more impenetrable to the X-rays than the contents of the normal mediastinum. Williams, of Boston, asserts that through the fluoroscope tuberculous deposits in the lungs can be readily seen, but it is obvious that the conditions in the mediastinum are so totally different that no inferences to it can be drawn from observations upon the lungs. In this case the vagueness and variability of the physical signs led me to doubt the existence of an aneu-

rism, and this doubt has been confirmed by the skiagraphs of the chest.

Case IV.—Aneurism of the innominate artery. For comparison, skiagraph of trunk of a 5-year-old boy; eighteen inches from plate: six minutes exposure.

SYMPTOMS OF SPEECH DISTURBANCES AS AIDS IN CEREBRAL LOCALIZATION.

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Speech and language, for language is more than speech, are so intimately connected with the various functions of the brain that only lesions giving rise to certain definite disorders of speech can be accurately localized. There are probably numerous cortical centres for speech memories, but at present not more than five of these are localizable.

For practical purposes of cerebral localization, it matters not whether we accept the theory advocated by Freud[1] that the speech apparatus is found located in an unbroken area of the cortex in the left hemisphere, between the cortical endings of the auditory and optic nerves, and the motor speech and arm fibres, or the views held by many able investigators that in certain portions of this cortical area are found a number of definite speech centres connected with one another by sub- and transcortical fibres, the fact still remains that disturbance of definite portions of the brain gives rise, when uncomplicated by other conditions, to distinct and unvarying disorders of speech.

The higher, differentiated forms of speech are unilaterally located in the brain, in the left cerebral hemisphere in right-handed persons, and in the right hemisphere in left-handed individuals, yet, as Hughlings-Jackson first pointed out, motor speech, at least, is bilaterally represented in the brain. A person may be speechless from a unilateral lesion, but this rarely renders him wordless. That is, he may be unable to utter speech, yet he may understand the speech of another.

Motor Speech Centres.—Motor or emissive speech centres seem to be confined to a small area of the cortex, the feet of the second

[1] Zur Auffassung der Aphasien, 1891.

and third frontal, and the extreme lower portions of the central (ascending frontal and parietal) convolutions. While this entire area is small, yet in it there appear to be three centres concerned in motor-speech mechanism. They occupy such a small portion of the cortex and are separated by such a small space that it is rare to have one involved by a gross lesion without having the others affected. A few clinical cases, however, are on record that seem to demonstrate that one of these centres may be rendered functionless and the others left intact, or impaired to a slight extent.

The first of these centres is the only motor centre of speech that has received general recognition, and in honor of its discoverer, it is usually known as Broca's centre of speech. It is situated in the foot of the third left frontal convolution in right-handed persons and in the corresponding portion of the opposite hemisphere in left-handed individuals.

If the lesion is strictly limited to this portion of the cortex, but more or less completely destroys the centre, the patient will be unable to speak voluntarily, to repeat words after another, to read aloud, to think in words, and in the majority of instances to write voluntarily or from dictation so as to be understood, but he will be able to understand speech, at times printing and writing, and he may be able to write from copy, transcribing writing and printing into script. If the wrong word is uttered he is aware of it, although he may be unable to correct his mistake. This is the usual form of motor aphasia, but the lesion is rarely confined to Broca's convolution, besides, in the majority of cases of this form of speech defect, the connections of this centre with other centres of speech are affected. This results in

Combined Motor Aphasia.—The most common form of motor aphasia is where all the cortical motor centres of speech are invaded by a lesion, either directly by partial destruction of all these cortical centres, or indirectly by the invasion of the commissural fibres that connect them. In such cases, if the lesion is sufficiently extensive or situated so as to affect the fibres from the motor speech centres to the corpus callosum, the aphasia will be permanent. The patient may be speechless, not able to utter a single word or intelligent sound, although he is rarely wordless, as he can understand the speech of another.[1] While at first the patient may not be able to utter a single word voluntarily, oaths, interjections of surprise and delight, expressions indicating anger, etc., may be uttered suddenly if the oro-lingual centre is not seriously involved. If the patient attempts to repeat these expressions voluntarily, he will fail. Gesture or pan-

[1] Hughlings-Jackson.

tomime expression next to emotional speech is best retained, although this is often greatly impaired at first. If the lesion has invaded the foot of the second frontal convolution the patient will be unable to write voluntarily or at dictation, but it is possible that he may be able to copy if the muscles used in writing are not paralyzed. In all forms of uncomplicated motor aphasia due to a cortical lesion, if the patient is able to write from copy he will transcribe both printing and writing into script; while most sensory aphasiacs, on the other hand, will copy mechanically each letter just as it appears to them; thus, writing will be copied into script and printing will be slowly and laboriously printed, each letter receiving the same degree of shading found in the original. Professor Dejerine believes that these methods of copying are invariably followed out by the motor and sensory aphasiacs.[1] I am willing to admit that this is true of the motor aphasiac, but I fear there are exceptions to the usual method of copying printing by the sensory aphasiac. It is well to bear in mind that gesture expression is sometimes lost in sensory aphasia, as well as in rare cases of the motor variety.

Dysarthria from Oro-Lingual Paresis or Paralysis.—This is the second form of motor aphasia to which I wish to direct attention. It may be questioned whether this should be considered under the heading of aphasia. As this defect of speech is attended with different symptoms from what we find in difficult or disjointed articulation from a lesion occurring in the pons or medulla, it seems to me best to consider it as one of the forms of motor aphasia. The cortical centre for the movement of the muscles concerned in speech is located in the lower portions of both central convolutions. In the cases of this kind heretofore recorded, the tongue and lip muscles have been the principal ones to suffer, and those of the larynx have escaped to a much greater extent. Mills[2] refers to an interesting case observed by himself in which the lesion involved the lower portions of both central convolutions on the left side, the foot of the third frontal escaping almost entirely. Articulation was imperfect, but the patient could talk and propositionize.

In the *Medical News* for August 15, 1896, I have recorded a case of speech defect due to oro-lingual paralysis, and I copy the following from the report: "On thoroughly and systematically testing his power of speech, no form of sensory aphasia is detected. He understands printed and written words. He reads inaudibly and compre-

[1] Professor Dejerine, Sensory Aphasia, International Medical Magazine, August, 1895, pp. 524–528.

[2] A Text-Book on Nervous Diseases, by American Authors. Edited by Dercum, pp. 409–410.

hends what he reads. On reading aloud his articulation is so imperfect that it is impossible for the listener to understand what he reads, except a simple word occasionally, which by an explosive effort of the lips the patient pronounces distinctly enough to be understood, if one is paying close attention. He can write voluntarily, at dictation, and copy, but he never learned to write well, and he forms the letters very imperfectly with the left hand. (His right hand is partially paralyzed.) He can write a little with the right hand. He copies printing and writing into script. When asked if he understands what he reads he nods his head, and with an explosive movement of the lips says, 'Yes.' He repeats simple words after another. It is observed that the greater the effort that he makes to pronounce a word, the more nearly he succeeds in pronouncing it distinctly, thus differing from the defect in speech due to a lesion in Broca's convolution, in which 'reflex' or 'automatic' speech is preserved to a greater extent than voluntary speech. As well as can be determined, he has no difficulty in thinking in speech, propositionizing."

As the diagnosis was a little uncertain as to whether the lesion was a tumor or thrombotic softening, I recommended trephining over the extreme lower portion of the fissure of Rolando. Dr. E. J. A. Rogers operated; found the lower portion of the ascending frontal and parietal convolutions softened and broken down. The degenerated portion of the cortex was removed. No lesion was found to account for the weakness in the right arm and leg.

On May 4, 1896, four months after the operation, the patient manifested marked improvement. The right leg was used nearly as well as the left; the right arm was only slightly weaker than the left, but it showed some ataxia, especially for finer movements, such as writing, etc. The right side of the face was wasted, especially around the corner of the mouth, and the face was drawn a little to the right. The speech defect was of the same character as found before the operation, but it was much less marked. With a decided effort he could slowly and deliberately pronounce most words, even those of considerable length. Sometimes it required two or three attempts to pronounce a long word, but in the end he usually succeeded. The lips and tongue were not paralyzed but ataxic. They presented very much the same condition that was found in the muscles of the right hand and arm. He had no difficulty in thinking in speech. He still wrote much worse with the right hand than he had done before his sickness. The writing with the left hand was fairly good for one who never wrote even an ordinary hand. He did not transpose any letters. Simple words he spelled and wrote correctly. If a word were spelled for him he did not write it any more rapidly or correctly

than when he was allowed to spell it himself. The defect in writing seemed to be due entirely to the ataxic condition of his right hand and arm.

The patient died a few months subsequently from acute softening of one side of the pons, caused by thrombotic occlusion of an artery. At the autopsy the insula and the third frontal convolution were normal in appearance; the cortical softening had been limited to the lower portions of the central convolutions; neither the arm nor leg centres of the cortex showed any change. In the left lenticular muscles, extending from a point opposite the knee of the internal capsule backward, softened areas presenting a cystic appearance were found. The front part of the softening was some distance external to the internal capsule, but the posterior portion reached up to the capsule. It seemed quite evident that the cortical lesion alone accounted for the oro-lingual paresis, and the lenticular lesion for the weakened and ataxic condition of the arm and leg.

In connection with the publication of this case I have said, "Kussmaul and others give muscular wasting of the face in connection with speech defect as one of the diagnostic symptoms of bulbar lesion in contradistinction to one occurring above the nuclei of origin of the cranial nerves concerned in articulation and phonation. But few writers so far have laid stress upon the fact that an irritative cortical lesion may cause rapid and pronounced wasting in the group of muscles involved. The second case reported in this series is a striking example of this.[1] One of the chief symptoms between atrophy of the muscles from a nuclear lesion and from one in the cortex is that in the latter the affected muscles respond normally to electricity, while in the former they do not. The wasting from irritative cortical lesion is probably due to an inhibitory influence on the trophic centres, while that which occurs from a nuclear lesion is due to the direct effect on the trophic centres of the muscles themselves. In a case of oro-lingual paralysis or paresis, when the lesion is on the left side, articulation will be imperfect, but many words may be uttered so as to be understood. There will be no defect in thinking, in speech propositionizing, provided Broca's centre is intact. The greater the effort exerted by the patient in pronouncing a word the more nearly he will succeed. In aphasia due to a lesion in the third left frontal convolution, the greater the effort made by the patient in uttering a word, the more signally the failure.[2] He will speak best when he surprises the muscles concerned in articulation, and in consequence automatic or reflex speech may be preserved

[1] Medical News, July 11, 1896, p. 120.

[2] Ibid., August 15, 1896, p. 179.

when voluntary speech is lost. Broca's centre is unilateral and situated on the left side in right-handed persons and on the right side in left-handed individuals. On the other hand, the oro-lingual centre is bilateral, and destruction of the left centre will not abolish the ability to talk; there will be a dysarthria rather than an anarthria. As the centre is so close to the one presiding over the muscles concerned in writing, any defect in writing will be a dysgraphia rather than an agraphia. There will be no transposition or omission of letters or words, nor misspelling. In a paralyzing, non-irritating cortical lesion the tongue would probably deviate towards the affected side of the face, and the muscles of the lower side of the face will be very weak but not completely paralyzed, and those of the upper side of the face will act less readily and more imperfectly than in the normal condition. When the cortical lesion is an irritative but paralyzing one, as occurred in the case reported by me, the tongue may be protruded in the median line, but there will likely be some deviation if it is kept protruded for some minutes. The affected muscles of the lower side of the face will be wasted to a greater or less extent."

At the time of reporting this case I had not met with one in which the lesion was in the right oro-lingual centre. A few weeks ago, however, Dr. Parkhill referred a patient to me with a lesion in the lower portion of the right central convolution, of thirty-four years' duration. The symptoms, so far as speech defect was concerned, were strikingly similar to those observed in the case in which the lesion was on the left side. This case will be reported by Dr. Parkhill and myself in a joint paper.

Anorthographia.—While motor agraphia has been recognized by nearly all systematic writers on aphasia, yet very few are inclined to the view that there is a graphic centre distinct from that which controls the muscles of the hand and arm concerned in writing. Most cases of motor agraphia have occurred in connection with a lesion in the foot of the third frontal convolution. Many, however, are of the opinion that in the foot of the left second frontal convolution, which is just in front of the centre for the movements of the hand, is situated a centre, the relation of which to writing is similar to that of Broca's centre with reference to speech utterance. In regard to this Mills[1] says that "no clinico-pathological case fully corroborative of this statement has been put on record."

Quite recently I reported a case of cyst of the brain in the foot of the left second frontal convolution, in which there was an inability to write on account of loss of the power to spell or to arrange letters in words according to common usage. Every letter in the alphabet

[1] A Text-Book on Nervous Diseases, by American Authors, p. 436.

was well formed, and the patient wrote a good legible hand when the words were spelled for him.[1] The case is extremely interesting. I will give the principal points from the detailed report in which copies of specimens of the patient's writing will be found.

A man, a stock-raiser by occupation for the last few years, strong and rugged in appearance, but subject to frequent attacks of migraine, wrote a good and rapid hand. In September, 1893, he first experienced difficulty in writing. He misspelled and transposed the letters of the words. The disturbance soon became so great that it was difficult to make any sense out of what he had written. Scarcely a word of any length was spelled correctly a year after he first experienced difficulty in writing. He soon ceased to write, as the effort was tiresome to him, and he had to spend an hour or more in trying to write a page of note-paper. In July, 1894, the patient began to suffer from pain in the frontal region of the head. In January, 1895, the patient, while conversing with his wife, suddenly found himself unable to talk for a period of about fifteen minutes. He could not utter a single articulate sound. His mind, he said afterwards, was perfectly clear at the time. On April 19, 1895, at the time that he first consulted me, muscular power and all forms of sensation were normal. Mental action was very defective in concentration, sustained attention, and in memory. There was no form of visual or auditory defect in speech. He could speak voluntarily, but speech was slow, and he occasionally hesitated in pronouncing long words. He repeated words after another quite readily, except that he was slow and deliberate in articulating, and sometimes he hesitated before trying to pronounce some words. It was observed that the greater the effort that he made in trying to utter words, the more nearly he succeeded. If he made a mistake he at once recognized it and usually corrected it. He wrote his name well and copied printing and writing into script with scarcely a mistake. In writing voluntarily he transposed the letters of words, and added, omitted, and transposed letters, and sometimes words, so that it was difficult to make any sense out of what he wrote, unless one knew what he was trying to write. On asking him to spell a number of words that he had written, it was found that he made the same mistakes in spelling by ear that he had made in writing. It seemed to matter little how he spelled a word, he usually pronounced it correctly.

On October 24, 1895, about six months after I had seen him, I again examined him. I found that he was partially demented, he had lost in weight, suffered severely from headache, but the only pronounced symptom was the inability to write intelligibly on account

[1] Medical News, August 1, 1896, p. 122.

of his inability to spell. This was more pronounced than at the time of the first examination. I had the patient write me a letter each day for a period of about six weeks, giving me his own biography. He copied both printing and writing into script, and wrote much more rapidly at this than he did at dictation or voluntarily. If I spelled the words for him he wrote readily and made no mistakes. It took him about two or three hours to write voluntarily a letter containing six or seven lines.

I decided to recommend an operation for the removal of a growth from the foot of the second left frontal convolution. December 5 was the day set for the operation. On December 2 he wrote the following letter:

"Dec. 2, 1895.

"DR. ESKRIDGE.

"Drar Ser

"I wont too sells three Hudderd acers of lande foe actage six Rooms rick and Saliage Hous Mtht Barnis and shedes and a Poller yard close In Denver. I am a goact palie men, and the is Lore our loge and two derery ccows.

"and I wanie teal you Ediths preare whe she gose two Boan when I lve awn ton I prey the cook Lorde my slir tow seope and my papa and my momo and Edith.

"the Fanlure thatewdeEct note we did nonte tale cin.

"Dence

tal Cannede

"a untill go tow SicKes Hospreal."

Knowing what he wanted to write, the letter may be liberally translated thus:

"December 2, 1895.

"DR. ESKRIDGE:

"DEAR SIR,—I want to sell three hundred acres of land for a house, a six-room brick cottage, with barns, sheds, and poultry yard, close to Denver. I am a good poultry man. We have four cows—two large and two small dairy cows. I want to tell you Edith's prayer, which she says when she goes to bed, 'When I lay me down to sleep, I pray the good Lord my soul to keep, and my papa, and my mamma, and Edith, and whom I love as my own soul.' The furniture that we do not want in Denver I wish to sell. Continued until I go to St. Luke's Hospital."

On the day set for the operation Dr. Clayton Parkhill trephined over the foot of the left second frontal convolution, found a cyst and evacuated its contents. No other pathological changes in the brain were found.

After the operation his mental condition considerably improved, and he wrote much better, making fewer mistakes in spelling. In fact it was quite easy to read his writing. For a further record of the case the reader is referred to the *Medical News* for August 1, 1896, p. 122.

In a summary of the results of a study of the symptoms in six cases of aphasia I have said, "The last three cases in the series published presented defects on the motor and emissive side of speech mechanism. The first of these three is the most interesting on account of the distinctness of the symptoms, the care with which they were observed, and the limited character of the lesion found at the time of the first operation. A detailed description of all the symptoms will be found by referring to the number of this journal in which the case has been published. Briefly stated, they were a loss of the power to spell or to arrange the letters in a word; loss of power to write intelligibly, because the letters were jumbled together in an irregular manner, but the letters of the alphabet were formed perfectly. In studying his spelling from day to day, it was observed that, while there was a certain similarity in the manner in which he arranged the letters in the words, he spelled the same word differently from time to time, thus showing an uncertainty in his own mind in regard to how a word should be spelled.

"Bastian[1] gives the copy of a letter written him by one of Sir William Jenner's patients while he (Bastian) was a resident physician in the University College Hospital in 1869. The recorder states that the handwriting was very good, and that the letter, which is a long one, contained only two trifling erasures. While there were several mistakes in spelling, the principal error consisted in the transposition and omission of words. Unfortunately, the case is not given in sufficient detail to enable one to determine whether the defect in writing is due to a lesion in the receptive (sensory) or emissive (motor) side of the speech mechanism.

"Kussmaul[2] quotes several cases from a paper written by Bastian. One of these was observed by Hughlings-Jackson. In it the misspelling was the most glaring speech defect. The patient in attempting to write her name wrote 'Sunnil, Siclaa, Satrena,' and for her address she wrote the following: 'Sunesr nut to mer tinn-lain.' In another case observed by Bastian the patient, trying to write 'Royal naval medical office belonging to the Admiralty,' wrote 'Roydnendd navendendd oforendendd Belondendd.' The patient observed by Ferber, an account of whose case is quoted by Kussmaul in this connection, wrote 'schrussen' for 'grüssen,' 'schreigen' for 'schreiben,' 'butter' for 'mutter,' 'omdern' for 'modern,' and in her own name put a 'g' in place of 'ch.'

"In none of the above quoted cases was the pathologic lesion determined by an autopsy or surgical operation, and Kussmaul fails

[1] Paralysis from Brain-Disease, pp. 189–190.

[2] Cyclopedia of the Practice of Medicine, Ziemssen, Vol. XIV, pp. 789–790.

to quote the clinical records of the cases to a sufficient extent to enable one to determine the probable seat of the lesion. The spelling, however, in most of the cases is similar to that found in the fourth case of the series. This case, so far as I know, is the first one placed on record in which a lesion limited to the foot of the second frontal convolution has been found, either at the autopsy or by a surgical operation for the relief of the brain symptoms, in which the speech defects have been observed and studied. The symptoms were carefully observed, and the primary defect in speech seemed to be an inability to arrange the letters in words in the order in which he had learned to place them. The man was intelligent, fairly well educated, and for years had held a responsible position that required him to be accurate in his spelling and writing. The defect in spelling led to his writing in an unintelligible manner. Besides the defect in spelling, there is an inability to arrange the words in a sentence according to grammatical usage, syntactic disturbances in speech or akataphasia. Syntactic defects in speech are found most typically in some cases of sensory aphasia. In the second case published in this series, the power to spell was perfect, but akataphasia was pronounced; one reason for concluding that the primary defect in speech in the third case reported was an inability to spell rather than an inability to write, and as shown by the patient's power to write readily and correctly on my spelling out the words for him.

"Loss of the power to spell correctly undoubtedly occurs in persons who are suffering from sensory aphasia, but these cases are easily distinguished from the cases of aphasia in which no visual or auditory disturbance of speech is found. It is probable that most cases of the loss of the power to spell due to a lesion in the foot of the second frontal convolution will be associated with some impairment of mind, the degree depending upon the character and extent of the lesion. Further observations are needed before we can determine whether these cases termed dislogical paraphasia can be distinguished from these forms of aphasia in which the defect in spelling is apparently the primary and principal symptom.[1]

"If any conclusion is justifiable in the observation of one case, it would be that a lesion in the foot of the second frontal convolution

[1] In these cases, if the loss of power to write is due to the loss of the power to spell, is the word agraphia the proper term? It has occurred to me that the word anorthographia might be employed instead. Professor Maurice G. Dunham, Professor of Greek in the University of Colorado, for some very good reasons seems to prefer the term scoliographia instead of anorthographia. The principal objection which he makes to the latter term is the use of the "an" to denote negative. "An" is in common use before arthria to denote the negative.

on the left side in right-handed persons, and probably on the right side in left-handed individuals, will give rise to a defect in speech in which the principal symptom will be the loss of the power to spell.[1] It should be borne in mind that a lesion, such as a tumor, abscess, cyst, and probably thrombotic softening occurring in the foot of the second frontal convolution, will interfere to some extent with articulation, the mentality of the patient, and in many cases with the function of Broca's convolution. It is probable that the syntactic disturbances in speech depend upon the impaired mental condition of the patient. 'Unlike words, sentences are not stored up in memory ready for use.'[2]

"Does a centre for writing exist? According to Bastian and others, cases of agraphia have been observed in which the patient was unable to make more than meaningless strokes. These patients have been unable to read or spell correctly. We can write with a pen held with the teeth, hand, or foot. It is very improbable that the same centre in the cerebral cortex would serve to guide these various widely-separated groups of muscles in writing. On the other hand, no matter what groups of muscles we employ in the formation of letters, the arrangement of the letters in a given word is always the same. It seems to me more probable that the memory for the arrangement of letters in words is stored up in the cerebral cortex. This process is learned by tedious and repeated repetition. We should naturally expect to find the cortical centre in which is registered the memory pictures for the arrangement of letters in a word, to be located near the centre which governs the muscles usually employed in writing. It will be interesting to observe whether a lesion in the second frontal convolution on the right side of the brain in right-handed persons is attended with any loss of the power in spelling. So far as I can see at present, it is impossible to investigate the orthographic centre in a very illiterate person."

It seems to me that our studies of motor speech defects so far justify us in accepting the following conclusions:

The centre in which is stored the memory pictures of the arrangement of letters in words, etc., is probably situated in the foot of the left second frontal convolution in right-handed persons, and presumably in the corresponding convolution on the right side in left-handed individuals.

Cases of so-called pure motor agraphia apart from the involvement of the muscles concerned in writing have never been demonstrated, and reasoning from analogy it seems improbable for them to occur.

[1] It is possible that the primary defect is in the inability to pronounce.

[2] Kussmaul.

Oro-lingual paresis occurs from a lesion in the extreme lower portions of the central convolutions (ascending frontal and parietal). This centre is bilateral, and the paralysis is never complete from a unilateral lesion. The defect of speech from such a unilateral lesion is a dysarthria rather than an anarthria. It is distinguished from the disjointed articulation resulting from a lesion in the pons or medulla by the slight mental defect, by the symptoms of encroachment on Broca's centre, by the character of the paralysis, and the normal response of the affected muscles to the faradic current.

That Broca's aphasia is due to a lesion in the foot of the third frontal convolution I have not attempted to discuss, as the subject seems to be settled beyond all dispute.

Whether the loss of the power to write intelligibly, the letters of the alphabet still being formed perfectly, from the loss of the ability to spell or arrange letters in words according to usage, should be termed agraphia or anorthographia is questionable. I have met with one case in which the only defect connected with speech mechanism is the inability to pronounce. The patient writes a good hand voluntarily, and copies well and rapidly, transcribing both printing and writing into script. When I pronounce a word for him he spells it without hesitation, but he cannot pronounce such simple words as dog, cat, rat without showing some hesitancy and uncertainty. Longer words he cannot pronounce at all, or very rarely, and then only after a considerable effort. If I pronounce similar words for him he spells them readily. The lesion in this case was an old injury to the skull over the cortex, just in front of the face centre on the right side. To what extent the brain has been injured I am not able to say. The man has been insane twice, each time the insanity extending over a period of a year or more.

Sensory Aphasia.

The various auditory and visual disturbances of speech are included in sensory aphasia.

Auditory Disturbances of Speech.—A case recently reported by me[1] seems to demonstrate that a lesion in the posterior portion of the first and second temporal convolutions will give rise to word-deafness and mind-deafness, and that the lesion necessary to produce mind-deafness must be more extensive than one capable of causing word-deafness.

A vigorous young man, a Bohemian by birth, in a drunken brawl, was struck above the left ear with a coupling-pin or the butt of a

[1] Mind and Word-Deafness, etc., Medical News, June 20, 1896, p. 698.

revolver and felled to the ground. The skull was fractured and a piece of bone detached and compressed the brain. The depressed bone was rectangular in shape, with long axis extending from before backward, and measuring in length two and a half inches and in width one and a quarter inches. The centre of the depressed bone was on the auriculo-bregmatic line. The lower portion of the fracture was a half inch above the base line of the skull. On Dr. Rogers removing the depressed portion of bone the patient regained a fair degree of consciousness after coming out from under the influence of the anesthetic, but he was found to be mind- and word-deaf. He could hear, as was evidenced by his looking in the direction from which sounds proceeded. He showed no gleam of intelligence when a watch was held to either ear, when a bell was tapped, or when coins or keys were jingled.

A few days later the patient had a general convulsion, which seemed to affect the trunk muscles more than those of the extremities. The next day another convulsion similar in character to the first occurred. The first and second temporal convolutions were explored, a small quantity of dark semifluid blood found just below the cortex and removed. Soon after the removal of the blood from the left temporal lobe, improvement became manifest, and within a few days he was able to distinguish sounds other than words. Then he showed distinct appreciation of the tick of a watch, or the jingling of coins or keys. When a watch was held against his ear he said, "Going pretty fast," but when I spoke to him he stared at me and seemed puzzled. The extravasated blood had taken place into the subcortical structure beneath the posterior portion of the first and second temporal convolutions. The patient made a complete recovery, and in the course of a few weeks from the time of the second operation all symptoms of word-deafness had passed away. It seems reasonable to conclude from a careful study of this case that the ability to interpret the meaning of sounds in general resides in about the same cortical area in which the memory pictures of the sounds of words are stored, but that the centre for psychical hearing is more extensive than that for word hearing, and a greater lesion is necessary to produce mind-deafness than word-deafness. It will be remembered that in the case just referred to mind-deafness began to lessen as soon as pressure caused by the hemorrhage had been relieved, although word-deafness did not improve a great deal until several days or a week or two later. It is just possible that the centre for the interpretation of sounds in general is situated posteriorly to the area in which word-memory resides.

Two forms of word-deafness are recognized by some. One is

termed pure word-deafness, and the only symptoms are inability to understand spoken speech and failure to write at dictation. The person so affected shows no defect in reading aloud, writing voluntarily, or copying or understanding what he has read or written. Professor Dejerine refers to a typical clinical case of this form of word-deafness observed by Sérieux.[1] Dejerine thinks that the anatomical localization of pure word-deafness is not established, but is inclined to place it in the left temporal lobe. This form of word-deafness is probably due to a lesion in the left temporal lobe, and involves the auditory entering tracts from both hemispheres, as suggested by Lichtheim,[2] who observed a clinical case of pure word-deafness in which there was no disturbance in volitional speech and writing, nor in reading aloud. Starr has collected seven cases, most of which are examples of pure word-deafness, and in all of these the lesion was limited to the first and second left temporal convolutions.[3]

The second form of word-deafness is the sensory form of aphasia, described by Wernicke, in which there is not only loss of the power to understand spoken speech, with inability to write at dictation, but reading aloud is impaired or abolished. In these cases, as the patients cannot verify by audition what they say or mean to say, the centre for word-hearing, of course, being affected, paraphasia is present, including paragraphia and paralexia. It is questionable whether two forms of word-deafness should be recognized. In both the lesion is probably in the posterior two-thirds of the first and second temporal convolutions, but in pure word-deafness it is limited to the cortex in all probability, while in word-deafness with paraphasia it is more extensive, and the subcortical association tracts are undoubtedly affected.

While clinically we may distinguish three varieties of auditory disturbances of speech, pure word-deafness, mind-deafness, and word-deafness with paraphasia, the lesion in all these is in the posterior portion of the first and second left temporal convolutions in right-handed persons, and on the opposite side of the brain in left-handed individuals, being, in all probability, least extensive in the first variety and increasing in the order named, in the other two, in both of which it extends to the subcortical association tracts.

In all cases of auditory disturbance of speech, except the lightest pure word-deafness, there is some apraxia (loss of the knowledge of the use of things). This varies in proportion to the extent of the lesion in the posterior portions of the first and second temporal con-

[1] International Medical Magazine, August 18, 1895, p. 529.

[2] Quoted by Mills, A Text-Book on Nervous Diseases, by American Authors, p. 438.

[3] M. Allen Starr, Brain, Vol. XII, 1889, p. 86.

volutions. In some cases it is so slight as to be easily overlooked unless the patient is carefully examined for it. In some instances memory for the uses of the more common articles is retained, but it may be impaired for those that have been less frequently used by the patient. Apraxia has no localizing value except to indicate that the lesion is in the sensory or receptive side of speech mechanism. It is found in visual disturbances of speech when audition is unaffected, and *vice versa.*

If the auditory aphasiac is able to copy he will usually do so mechanically, transcribing printing into printing and writing into script, giving each letter the shading found in the original. The patient is often able to copy or write voluntarily his name, or some word with which he has become very familiar by having written it frequently in a routine way for a considerable length of time.

Visual Disturbances of Speech.

A brief abstract from the records of a case, reported by Dr. E. J. A. Rogers[1] and the writer, demonstrates the importance of the symptoms of the visual disturbances of speech as aids in cerebral localization. A young colored man, three months before I saw him, had been struck on the right forehead just above the supraorbital ridge with a chair wielded by another colored man. The patient was knocked down and rendered senseless for an hour or more. After regaining consciousness he felt dizzy and was troubled with slight headache for two or three days. Shortly after this occurrence he left the hospital and resumed his occupation as a waiter for eleven weeks. At the expiration of this time he was observed to be confused one morning, and later in the day he was found lying in the yard in a stuporous, semiconscious condition. When I saw him, two days later, a thrust of a pin into the right limbs or side of the body caused no movements, but the left leg or arm was withdrawn on being irritated. There was no paresis or paralysis of any muscles. The patient, although stupid and apparently delirious, would respond to questions, but his answers were irrelevant. When asked his name he said "beer." When asked if he had pain, he replied, "Mamma why don't you." By a series of questions, continued for nearly half an hour, it became evident from his answers that he recognized in a dazed manner what was said to him, but that he was aphasic and paraphasic. All forms of motor aphasia could be excluded, and as he was neither mind- nor word-deaf there seemed no auditory disturbance of speech. The natural conclusion was that the sensory aphasia was

[1] Medical News, June 6, 1896, p. 439.

of the visual type and the paraphasia resulted from an extensive subcortical lesion, below the angular gyrus. On Dr. E. J. A. Rogers removing a button of bone from the posterior portion of the parietal region, a few lines below the parietal eminence, and exploring the brain, a considerable quantity of dark clotted blood and softened brain tissue was found in the centrum ovale at some depths below the cortex of the angular gyrus. The patient made a tedious but complete recovery.

During convalescence from the surgical operation he was repeatedly examined with reference to his speech defect. There was a condition of partial apraxia for memories of all the special senses, except tactile, but for those of this sense the apraxia was complete on the right side and partial on the left. His failure to recall the spoken names of objects was about as great as his inability to recall the uses of things. He understood speech and sounds other than speech perfectly. He had never known anything of music, and it was therefore impossible to determine the effect of the lesion on this sense. He experienced little difficulty in calling to mind objects named, and readily pointed them out at request. No auditory defect of speech was found.

He could not recognize letters, figures, notes, and colors seen. He did not understand printed or written words. He could not read printing, writing, or music aloud or inaudibly, neither could he recall objects the names of which were seen. On testing his power to write voluntarily, he wrote,—

"Willeer Dotson
E J illul bag and Jack."

Meaning to write William Dotson (his name), but the other is meaningless. It is probable, however, that he intended it for his address.

On dictating for him to write "The people enjoyed themselves," he wrote "The peole enjoujm evfoves themseds."

On trying to copy "James come home," he wrote "fues Cues Cues." I neglected to test his ability to copy printing.

After he had learned to recognize and name "bell," "spoon," and "lamp," he was requested to write their names. For "bell" he wrote "Hell," for "spoon," "spoodn," and for "lamp," "lampus."

He could write his name imperfectly, and was able to read it immediately after writing it, but the next day he failed to decipher it. He could not read his name when it was written by another person, nor when it was printed. Occasionally he could recognize a letter when he was made to trace it with the index-finger, the movements being guided by another person. The patient had right bilateral

hemianopsia, and this condition remained for nearly two months after the operation.

Two forms of word-blindness are described by Dejerine.[1] The ordinary form is the one presented by the patient to whose case reference has just been made. The patient is usually completely or partially agraphic, paraphasic, and alexic. This condition is due to a lesion in the cortex of the left angular gyrus. It is probable that the paraphasia found in most of these cases is caused by the destruction of the association fibres beneath the angular gyrus. When the lesion is deep and involves the optic radiations on their way to the cuneus, right bilateral homonymous hemianopsia will also be present. The patient is usually unable to recognize words or letters, but he may or may not be able to read figures or to calculate.

The second form of word-blindness has been described by Dejerine and termed *pure word-blindness.* The patient writes spontaneously and at dictation, as in the normal condition, naturally without being able to read it; but a copy is altered and made mechanically. Speech and intelligence are intact. In a case observed by Dejerine, the lesion was found at the autopsy to involve the point of the occipital lobe, the base of the cuneus, and the lingual and fusiform lobules. The patient, very intelligent and cultivated, was totally word-blind and hemianopsic, but he could write spontaneously and at dictation. He was also note-blind. Formerly a good musician, he could not decipher a single note. He could read figures and calculate, and speech and intelligence were intact.

Wyllie and Redlich, according to Dejerine, have reported similar cases which presented the same anatomical localization. Cases XLII, XLIII, and XLIV in the table compiled by Starr[2] bear some resemblance to the case reported by Dejerine, but none of these are typical.

Mind-blindness, inability to determine an object by the visual organs, is a condition somewhat similar to apraxia, in which the subject has lost the power to recall the use of an object. Such a defect is due to a lesion in the occipital lobe, situated in the cortex or deep in the white substance involving the association fibres which connect the occipital cortical centres of sight with other regions of the brain. In the fifty cases of sensory aphasia collected by Starr, twelve presented a condition of psychical blindness, and in all the occipital lobe was diseased. In six of the twelve cases hemianopsia was also present.[3]

[1] International Medical Magazine, August, 1895, p. 528.

[2] Brain, Vol. XII, 1889, p. 100.

[3] Ibid.

Not infrequently word-deafness and word-blindness with various disturbances of speech occur from extensive cortical or subcortical lesions; so that while word-blindness is produced by a lesion in the cortex of the angular gyrus, it may also occur, as Starr has pointed out, from one extending from this centre, either anteriorly into the temporal region or posteriorly into the occipital. In the former instance it would probably be associated with word-deafness, and in the latter with mind-blindness.

"In testing the temporo-occipital association tracts inability to distinguish a familiar object by its sound would indicate that the temporal end is affected; failure to recognize an object seen, a break in the occipital end; and loss of power to recall the name of an object recognized, a lesion in the course of the tracts between the temporal and occipital lobes." [1]

Professor Dejerine claims to be among the first, if not the first, to call attention to the fact that in some cases of word-blindness there occurs a defect of speech similar to that found from a lesion in Broca's convolution. Of twenty-seven cases tabulated by Starr in which word-blindness and word-deafness existed, a motor defect of speech was observed in only two.

This article might be indefinitely extended in the discussion of interesting symptoms of speech-defect, but the principal ones of value as aids in making a localizing diagnosis have been presented. These may be briefly summarized.

(1) If the lesion is in the foot of the left third frontal, Broca's, convolution in right-handed persons, and in the corresponding portion of the brain on the opposite side in left-handed individuals, the patient will be unable to speak voluntarily, to repeat words after another, to read aloud, to think in speech, and in the majority of cases to write voluntarily or from dictation so as to be understood, but he can understand the speech of another. He usually will be able to use and understand gesture expression.

(2) A lesion in the oro-lingual centre (lower portion of the central convolutions) will cause paresis or paralysis of the oro-lingual muscles, including the lower side of the face, and imperfect articulation, but the patient will be able, with a decided effort, to repeat words after another, to talk voluntarily, to think in speech, and to write, although the letters may be imperfectly formed. There is, as a rule, no omission or transposition of letters or word unless the lesion is sufficiently extensive to affect the adjacent cortical centres or their commissural fibres. It is possible that this centre is bilateral; that a lesion on either side may give rise to somewhat similar symptoms, and that the

[1] Ibid.

loss of function in the affected muscles will not be completely abolished from a unilateral lesion.

(3) A lesion in the foot of the second frontal convolution on the left side in right-handed persons or on the right side in left-handed individuals (the probable orthographic centre) will be attended by disturbances in writing, consisting of inability to write from inability to spell. In the only case reported of this character the patient formed all the letters of the alphabet perfectly, but he omitted, transposed, and substituted letters to such an extent that his writing was unintelligible. He wrote well if the words were spelled for him.

(4) A limited lesion in the posterior two-thirds of the first and second temporal convolutions will be attended by word-deafness, and inability to write at dictation pure word-deafness. In a more extensive lesion in this region, mind-deafness with paraphasia and some disturbances in reading and writing will be added. The greater the extent of the cortical and subcortical areas involved the more marked the paraphasia and other symptoms of sensory aphasia.

(5) A lesion involving the angular gyrus and adjacent parts will cause word-blindness and inability to read, defects in writing, copying, and in speaking. In these cases paraphasia is often present. If the lesion affects the parts posterior to the angular gyrus, mind-blindness may be added.

The following is the plan that I have been in the habit of adopting in investigating cases of aphasia:[1]

(1) The power to recognize objects seen, heard, felt, tasted, smelled, and their uses.

(2) The power to recall the spoken names of objects seen, heard, felt, tasted, and smelled.

(3) The power to understand sounds other than speech.

(4) The power to understand speech and music.

(5) The power to call to mind objects named and point them out at request.

(6) If word-deaf, can he recognize his own name when it is spoken?

(7) The power to recognize a word spelled aloud.[2]

(8) The power to call up mentally the sound of a note, figure, letter, or word.

[1] Developed from the plan first suggested by Starr.

[2] Since writing the above I have added at this point (1) the power to pronounce inaudibly or aloud on hearing the word spelled; (2) the power to spell a word inaudibly or aloud on hearing it pronounced.

The examination thus far will test the various sensory areas, but more especially the auditory and the association tracts between the different sensory areas connected with speech.

(9) The power to recognize letters, figures, notes, and colors seen.

(10) The power to understand printed and written words.

(11) The power to read printing, writing, and music aloud and inaudibly, and to understand what he reads.

(12) The power to recall objects the names of which are seen.

(13) The power to write voluntarily.

(14) The power to write at dictation.

(15) The power to copy and the manner of copying printing and writing.

(16) The power to write the names of objects seen, heard, felt, tasted, and smelled.

(17) The power to read aloud and inaudibly and to understand what has been written.

(18) The power to write his name and the ability to read it when written by himself or by another person or when printed.

(19) The power to recognize a letter by tracing it with the index-finger or with a pencil, the movements being guided by another.

(20) The power to call up mentally the appearance of an object, a figure, note, letter, or word, when word-blind.

These additional tests will aid in determining the condition of the visual word memories in the angular gyrus and the connection between this area and the surrounding sensory and motor areas.

(21) The power to speak voluntarily, and, if impaired or lost, the character of the defect.

(22) The power to repeat words after another.

(23) Does the patient recognize his mistakes in speaking and writing, and can he correct them?

(24) Can the patient think in speech (propositionize)?

(25) Is there any special difficulty in the use of nouns, verbs, or other parts of speech?

(26) The power to understand pantomime or gesture expression.

(27) The power to employ intelligently gesture in expression.

(28) The power to read figures and to calculate.

(29) The power to count, both money and in numbers.

(30) The power to play a game of cards or other games.[1]

[1] In the preparation of this paper I have extracted freely from the article on "Cerebral Localization" recently written by me for The American System of Medicine.

AMPUTATION OF THE PENIS.

By Gwilym G. Davis, M.D., M.R.C.S. (Eng.),

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In amputating the penis the main object desired, aside from the removal of the diseased portion, is so to operate as to unite and cover the divided parts, leaving no raw surfaces to granulate, and thereby prevent the urethra becoming occluded by cicatricial contraction, besides ensuring quick healing. The various operations by the écraseur, whether cold wire or galvanic, are not desirable, and have generally been abandoned.

The circular amputation of the organ, dividing all the tissues at a single stroke, while it is said by Jacobson to give good results, has also been practically abandoned.

Some sort of flap operation has been very generally used,—that of Jacobson[1] probably the most. He cuts a dorsal and side flap and leaves the urethra longer than the corpora cavernosa. The flap is brought down and perforated for the passage of the urethra, which is then stitched to it. The flap is united to the remaining skin by sutures.

Treves[2] makes a circular cut through the skin, leaving it a little longer on its under surface. A catheter is introduced and the corpora cavernosa cut down to the urethra; this is left an inch longer. He then says that "it is slit up with scissors along the dorsum, and the lower wall is attached by a suture to the skin of the under surface of the penis, while the cut edges of the upper wall are sutured to the corpora cavernosa." A catheter should be kept in for three days, and "the patient may expect to be confined to bed for some weeks."

Ramon Guitéras[3] makes side flaps, and quotes H. Keller, of St. Louis, as advising that the corpora cavernosa be united by deep sutures.

Operations on the penis are apt to be slow in healing if all the cut surfaces are not absolutely approximated to each other. If any point is left unapproximated and uncovered, the irritation from urine or dressings is almost certain to start up suppuration and granulation at that point, and having once been started it is apt to involve other portions of the wound. It is evident that the greater the suppuration the greater is the liability to future contraction and stricture.

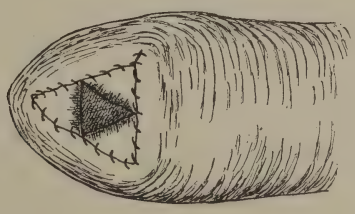
[1] Operative Surgery, p. 804.

[2] Operative Surgery, Vol. II, p. 656.

[3] Morrow's System of Genito-Urinary Surgery, Vol. I, p. 59.

To obviate these occurrences the following operation was performed:

The root of the penis is encircled by a couple of turns of a soft rubber catheter held by a hemostatic forceps. A circular incision is made through the skin down to the tunica albuginea. The penis is then turned up and an incision made through the corpus spongiosum, and the urethra dissected back for half an inch. Next divide the corpora cavernosa transversely at this point. With the finest catgut the dorsal arteries and those of the corpora cavernosa and perhaps a couple of others are ligated. Three catgut ligatures are then passed through the outer edge and substance of the corpora cavernosa on each side, so that, when tied, the cut surface is folded in the middle, making a straight line of union from the projecting urethra upward. The urethra is slit in three places, below and above to each side, back to the corpora cavernosa, making three flaps. The corners of these are to be cut off, leaving three small triangular flaps, which when spread out make one large triangle with its apex up and base down. (See illustration.) Beginning above, the skin is united by a con-



tinuous fine catgut suture to the edges of the three small urethral flaps. On arriving at the starting-point, if any skin is left, it is united in the median line. The surface is then dusted with iodoform or painted with Whitehead's paint (ethereal solution of iodoform and benzoin) and covered with cotton.

The patient may be allowed to pass his urine himself, the parts being immediately washed with boracic lotion, dried, and dusted freely with iodoform.

Care should be taken in dividing the skin. If pulled too far forward, too much may be removed, in which case it will cause too great tension on the stitches. If too little is removed, the urethral flaps will not be held nicely spread open. In dissecting out the urethra it is not necessary to grasp its inner surface with forceps and thereby injure the mucous membrane. The use of a retained catheter should, if possible, be avoided. These operations are usually done on old men in whom a cystitis is very liable to be started up or aggravated if it

already exists. This operation leaves the urethral orifice practically surrounded by mucous membrane, and if carefully done allows all the cut surfaces to be approximated with mathematical exactness. There are also no sutures to be removed. My patient had absolutely primary union, and was only kept in bed a week as a matter of precaution, he being 70 years of age. That the patient may expect to be confined to bed for some weeks, as stated by Treves, I can hardly agree with. The secret of quick healing in this operation, as in circumcision, I believe, lies in the absolutely exact approximation of all cut surfaces by the continuous catgut suture and keeping the parts dry with iodoform powder.

A CASE OF MOVABLE LIVER.[1]

By Frederick A. Packard, M.D.,

Philadelphia.

The case herewith reported was one which presented many points of interest during life, and this interest is rather intensified than lessened by the negative findings of the post-mortem examination. The fact that an error in diagnosis was made rather enhances the value of the report of such a case, and it is presented with a view to preventing similar mistakes in other instances, and calling attention anew to a subject that is deserving of careful consideration.

The history of the patient is as follows :

Matthew L., white, aged 40 years, a native of Finland, and a laborer by occupation, was admitted to the Philadelphia Hospital on August 8, 1896. The family and personal history of the patient presents no point of interest save for the occurrence of two previous attacks of acute articular rheumatism, the absence of venereal history, and the moderate use of alcohol.

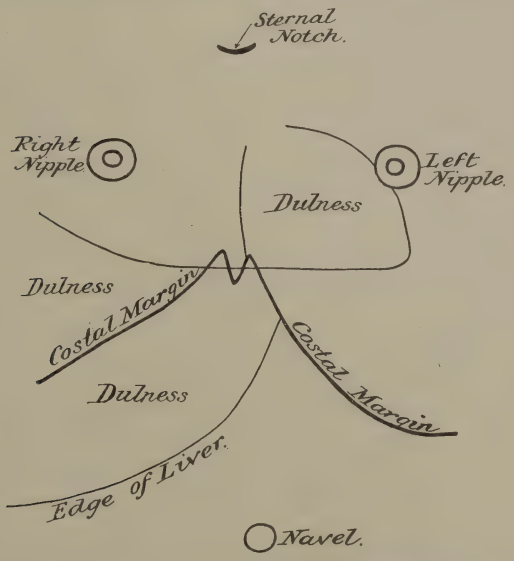
He was admitted for a third attack of acute articular rheumatism manifesting itself in the left ankle and the right elbow. On examination by my predecessor, Dr. T. G. Ashton, there were found, besides the ordinary signs of the local trouble in the joints named, a heaving cardiac impulse, a sharp and accentuated second aortic sound, and a soft apical systolic murmur. Under sodium salicylate the rheumatic manifestations promptly subsided. Before convalescence was fully established the temperature began to slowly and progressively rise.

[1] Read at the meeting of the College of Physicians of Philadelphia, November 4, 1896.

This rise proved to be the beginning of an attack of typhoid fever which was only remarkable for the exacerbation of an old chronic parenchymatous nephritis, which for two days was accompanied by almost complete suppression of urine. The temperature reached the normal point on September 8, and showed no subsequent rise that could be attributed to typhoid fever.

On September 23 he first complained of pain in the abdomen. This was stated to be in the region of the liver, especially in the neighborhood of the position of the gall-bladder. It was paroxysmal, always worse in the evening, and was oftentimes sufficiently severe to cause him to groan loudly. On September 28 he was slightly jaundiced, the stools were clay-colored, and the urine contained a small quantity of albumin, numerous granular casts, and biliary coloring matter.

Shortly after this date, October 1, I took charge of the ward. He was still slightly jaundiced, he was somewhat thin, his expression was rather anxious, and he appeared to be a decidedly ill man. A severe attack of colicky pain during the preceding night suggested



Chest tracing. Supposed infra-diaphragmatic abscess. Movable liver.

the possibility of gall-stone passage. His temperature was $100\frac{2}{5}°$ F.; the pulse rather soft and rapid. The abdomen was quite distended and there was decided tenderness at the extreme right of the epigastric region. The liver dulness extended in the right nipple line from the upper border of the sixth rib to a point nine to ten centimetres

below the costal margin, where the edge could be distinctly felt running in the direction seen in the tracing here reproduced (of one-fourth the size of the original direct tracing taken on cheese-cloth placed over the chest and abdomen). There was no splenic enlargement and no ascites. The area of cardiac dulness was not markedly enlarged (doubtless owing to pulmonary overlapping), and at the apex there was a soft blowing, poorly-transmitted systolic murmur. Anteriorly the lungs showed no abnormality aside from decided emphysema. Posteriorly there was dulness from the right inferior scapular angle downward to the base. Over this area the breath-sounds were harsh, rather feeble and distant, and there was slight diminution in vocal resonance and tactile fremitus.

These physical signs persisted uninterruptedly save on two occasions, when, after five-grain doses of blue mass, the edge of the mass receded decidedly towards the costal margin, and the area of dulness on the right side of the abdomen became decidedly less prolonged downward. The edge felt on palpation and the area of dulness held the same positions on every examination save on the two days that followed the administration of the evening dose of blue mass. The temperature of the morning was persistently subnormal, while that of the evening reached the neighborhood of 100° F. until October 5, when it remained at subnormal during the whole twenty-four hours. During this time the slight jaundice steadily persisted, and the epigastric pain continued save on the days after the administration of blue mass. On October 8 I made an exploratory puncture in the eighth right intercostal space in the anterior axillary line. The needle of the aspirator was carefully introduced up to the socket and slowly withdrawn, but nothing was obtained save some thick, dark blood. The needle was moved strongly by each respiratory act, and both on its introduction and during its stay in the liver the patient complained of severe pain in the right shoulder.

On the next day the patient expressed himself as feeling much better and there was slightly less distention of the abdomen. There was, however, no marked change in the abnormal mass within the abdomen.

On October 9 he was transferred to the surgical ward for operation for possible subdiaphragmatic abscess. While waiting for improvement in his general condition before the exploratory operation, the patient, on October 11, fell out of bed and was picked up unconscious, with stertorous breathing, unequal pupils, divergent strabismus, and complete palsy of the left side. He died on October 15.

The diagnoses suggested by the physical signs were enlargement of the liver from hypertrophic cirrhosis or amyloid change,

enlargement from new growth, enlargement from abscess, displacement from intrathoracic disease, and displacement from subdiaphragmatic abscess. Hypertrophic cirrhosis was excluded by the supposedly recent development of the condition, somewhat aided by the absence of ascites, of splenic enlargement, of the characteristic hue of skin, and by the presence of acute paroxysmal pain, and by the acute onset of his slight degree of jaundice; amyloid disease was excluded by the absence of cause for that condition, by the absence of splenic involvement, by the freedom of the urine from the characteristic properties of the albuminuria of amyloid kidneys, and by the absence of the facies that is so usually present in cases of that lesion; enlargement from new growth was excluded by the normal characters of the palpable margin and by the rapid development; displacement from intrathoracic disease was ruled out by the extent of the downward extension of liver-dulness in comparison with the extent of the emphysema and the amount of the pleural effusion. Two possibilities were supposed to remain,—hepatic abscess and subdiaphragmatic abscess. In regard to the former, it is now undoubted that abscess of the liver is a rare, but by no means unheard-of, sequel of typhoid fever, as is shown by the fact that Lannois found it once in seventy-one cases of typhoid fever, Romberg found it at autopsy in one case out of eighty-eight fatal cases in a series of 677, and Dopfer found abscess of the liver in ten out of 927 cases that came to autopsy. In Lannois's case cocci were found with Eberth's bacillus, but that the typhoid bacillus is capable of itself of producing suppuration has been shown by Dmockowski and Janowski, Flexner, Tictine, Martin and Robertson, Michon, Zahradnicky, Swiezynsky, Stühlen, Bruni, Catrin, and many other observers. It is just possible that the occurrence of a case of abscess of the liver after typhoid fever in another patient in the hospital during the summer may have added to the apparent likelihood of the presence of this condition in our patient. Subdiaphragmatic abscess was seriously considered because of the accompanying pleural effusion (which might, of course, have been caused indirectly by an abscess of the liver), but chiefly by the negative result of the puncture.

The patient was seen in consultation by one of the surgeons on the staff of the hospital, who agreed in the view that exploratory puncture of the liver could alone exclude abscess, and that, in case of a negative result of such puncture, exploratory incision should be made with a view to emptying the possible subdiaphragmatic abscess. I might say that he also felt the edge of the mass as depicted in the outline, so that the existence of such an edge was perfectly apparent to others besides myself.

Fortunately for us, and possibly for the patient, his condition was not deemed sufficiently favorable for immediate operation, and it was decided to endeavor to improve his general state before using the knife. Unfortunately for the patient—luckily from a strictly medical point of view—a sudden cerebral hemorrhage caused death before his general condition warranted serious surgical interference.

The autopsy was performed by Dr. Jamison, one of the assistant pathologists to the hospital, whose notes I copy.

Body of an emaciated male. Rigor mortis present. *Appendix* curled under cecum. On outside of it is a well-organized band of adhesion, the result of an old inflammatory deposit. *Gall-bladder* filled with fluid and adherent to great omentum. Left *pleural* sac is normal except for a few adhesions posteriorly. The right pleural sac contained about a half-pint of fluid. No evidence of pleurisy; no adhesions. *Pericardium* normal. Weight of *heart* 750 grammes. The right auricle contained only fluid blood, the other cavities had like contents. The valves were normal. Both ventricles were dilated. The right ventricular wall was firm, rather pale, more than twice its normal thickness. The left ventricular wall is enormously thickened, as are also the papillary muscles. The left *lung* is extremely emphysematous and congested; weight 610 grammes; the right lung also extremely emphysematous with no areas of consolidation; weight 730 grammes. The *spleen* weighed 250 grammes; its surface was smooth; the organ abnormally hard on section, dark-red, fibrous tissue prominent. Left *kidney* weighed 160 grammes. Organ firm, capsule adherent, cortex granular and reduced in thickness; blood-vessels thickened. Right kidney weighed 150 grammes. A small cyst present in cortex. Condition otherwise similar to left. *Ureters* normal. *Bladder* filled with urine; its wall thickened and distinctly ribbed. *Duodenum* normal. *Stomach* showed pronounced post-mortem staining. The mucous membrane was corrugated and covered with mucus. *Pancreas* normal. *Liver* weighed 1610 grammes. Surface smooth and shows recent aspirator puncture upon the upper surface about three inches from the right end and two inches in front of the coronary ligament. The large *arteries* are distinctly atheromatous. *Similunar ganglia* normal. *Thoracic duct* normal. The *intestines* showed Peyer's patches that had recently been the seat of typhoid ulcers. In one ulcer the cicatrization was scarcely complete. Otherwise the intestines were normal. *Calvarium* and *dura mater* normal.

The surface of the cerebellum showed a collection of blood beneath the pia. On section the blood was found to extend down between the branches of the tree, and was also found in the fourth

ventricle. The right hemisphere was very soft, and on opening the lateral ventricle it was found to contain a clot of blood, weighing about three ounces, and fragments of brain tissue. The entire floor of the ventricle was torn up by the hemorrhage. The left lateral ventricle also contained blood which had entered it from the other side. No lesion of the substance of the left hemisphere.

The clinical diagnosis sent to the pathologist was "probable subdiaphragmatic abscess following typhoid fever." Careful search revealed no grounds for such a diagnosis, and, unfortunately, in the course of the examination the attachments and relations of the liver were destroyed before the thought suggested itself to me that I had had to do with a movable liver. My first suspicion that I had been led into error by such an anomaly was when I saw the point of puncture at the very top of the liver, and found that the track of the puncture led directly downward into the substance when the liver was held in the position normally maintained in the body. I then perceived that it would have been impossible for me to have produced the lesion having this position and direction unless the liver had during life occupied an abnormal position. (The liver at autopsy was found in its normal position, under the diaphragm, and almost hidden by the costal cartilages.)

The absence of investigation of measurements of the ligaments of the liver and of the relations of the vena cava itself, and also as to the mobility of the liver is a misfortune, but I think it fair to judge that the mobility of the liver was demonstrated by the track of the puncture just as in the experiments in locating internal organs on the cadaver by the insertion of long pins.

To strengthen the proof of this being the condition present during life, I should mention the jaundice that was present, presumably from kinking of the bile-ducts, and the over-distention of the gall-bladder produced in the same way. The improvement in signs and symptoms after the administration of laxatives coincides perfectly with the case of Szigethy (given by Faure in his Paris Thesis of 1892, p. 205, obs. XLIX), where the movable liver was found to disappear from its abnormal position after the use of laxatives.

To my great comfort I have found in the literature several other cases of mistaken diagnoses from the same condition. Among these I might mention the case of Peters,[1] operated upon by laparotomy for supposed hydronephrosis, the case reported by Terrier and Baudouin,[2] wherein a supposed floating kidney proved to be a dislocated

[1] Medical Gazette, 1882, p. 412.

[2] Progrès médical, 1888, pp. 121–123.

liver, that of Richelot,[1] where typhlitis was suspected, and where displaced liver was found at operation, that of P. Müller,[2] where carcinoma of the mesentery was mistaken for a wandering liver, and the case of Legg,[3] where a supposed wandering liver proved to be a tumor of the kidney. I consider myself fortunate in having made a mistake which through a mere coincidence had no bad results.

The literature regarding movable liver is now quite extensive, the greater number of articles being contributed by gynecologists, and the larger proportion of the cases being associated with pendulous abdomen. A complete review of the literature would be useless in view of the admirable work in this line already performed by Faure in his Paris Thesis of 1892, and by J. E. Graham, in the "Transactions of the Association of American Physicians," 1895, Vol. x, p. 258. A few points may be here referred to because they have some bearing upon the case reported. Landau[4] says, on p. 10, "In the cases in which death permitted the diagnosis to be controlled, this proved wrong, since the normal liver was found in its normal place." This remark applies equally to our case, yet the point and direction of the puncture seem to me to be conclusive evidence of the fact of hepatic mobility. George Harley,[5] on page 53, says, "There is yet another possible source of error, though, from its extreme rarity, an error is unlikely to be committed. But, as the mistake is said to have once occurred, and it is quite possible that it may occur again, it is but right that I should call attention to it,—namely, the possibility of mistaking an anteverted small liver for an enlarged one." He then relates the case of a man whose liver-dulness extended from two fingers' breadth below the nipple to the crest of the ilium, and partly into the iliac fossa, a distance of eight inches in the perpendicular nipple line. At autopsy the liver was found to measure ten by eight inches, to weigh fifty-six ounces, and to be so placed that its under surface lay in the lumbar region, the anterior edge of the right lobe in the iliac fossa, a condition that would partly account for the signs in my case that were presented during life, and one that may readily be conceived to have changed during manipulation of the body after death.

Meissner[6] advanced the theory that there must be in certain in-

[1] Union médicale, 1893, 3 S., LVI, pp. 169–172.

[2] Deutsches Archiv für klinische Medicin, Bd. XIV, Heft 1, 1875.

[3] St. Bartholomew's Hospital Reports, 1877, XIII, p. 141.

[4] Die Wanderleber und der Hängebauch der Frauen, Berlin, 1885.

[5] A Treatise on Diseases of the Liver, London, 1883.

[6] Die wandernde Leber in ihren correlativen Beziehungen zu Schwangerschaft, Geburt und Wochenbett, Schmidt's Jahrbücher, 1869, p. 111.

dividuals a meso-hepar that determines the occurrence of wandering liver in some, but not in all women with pendulous abdomens. He points out, what is frequently ignored by other writers, the fact that enlargement of the uterus in pregnancy would not cause sinking of the liver, but would rather press it up against the diaphragm ; but that peritoneal adhesions between the different abdominal organs or directly between the uterus and the liver could readily produce great mobility of the latter. In the case that forms the basis of this article the condition of the suspensory and other ligaments of the liver was not studied at autopsy because of the erroneous clinical diagnosis.

Winkler[1] denies the necessity for the presence of the meso-hepar of Meissner's view, and attributes the displacement to pendulous abdomen and stretching of the suspensory ligament.

J. Wickham Legg[2] expresses a doubt as to the diagnosis of wandering liver, and states that in the two autopsies that had been held up to the time of his article, the liver was found in its natural place, and some other organ had been mistaken for the liver. In the case reported in his article, the supposed displaced liver was proven at autopsy to be a renal new growth. In my own case there was but one mass that could have given rise to the signs observed, and yet have disappeared after death,—that is to say, a transverse color containing feces. This explanation would at first sight seem to be strengthened by the disappearance of the mass on two occasions after laxatives. On the other hand, the evacuations produced by blue mass were not such as would have resulted from an emptying of an overloaded colon, and it is also inconceivable that a reaccumulation would on two occasions have taken place in twenty-four or even forty-eight hours after the laxative had acted.

Wassilieff[3] refers to a case observed by Botkin, where at autopsy the suspensory and lateral ligaments were "plainly and considerably elongated." This observation is certainly exceptional, and is of interest in connection with Faure's experiments on the cadaver.

An autopsy upon a case is reported by Peters,[4] where the liver was found with its long diameter parallel to the median line of the body with the right lobe below. All of the abdominal viscera were displaced. The condition of the ligaments of the liver is not stated in the report.

[1] Zur Casuistik und Aetiologie der Wanderleber, Archiv für Gynäkologie, 1872, Bd. IV, p. 145.

[2] St. Bartholomew's Hospital Reports, XIII, 1877, p. 141.

[3] Wiener medicinische Blätter, 1880, No. 30, p. 785.

[4] The Medical Gazette (New York), September 2, 1882.

Gontermann[1] reports a case of probable sudden dislocation of the liver during a severe coughing in a child about a year old. Sudden death occurred seventeen days after the onset from supposed twisting of the pedicle. No autopsy was performed, the diagnosis being based upon the character of the abdominal mass, and the absence of liver-dulness in the normal position.

Binnie[2] reports a case of this trouble where laparotomy was performed for exploratory purposes, and the suspensory ligament was found to be elongated. In this case the right lobe of the liver was found to be enlarged and to present on its surface a nodule resembling a carcinomatous growth. This case is, of course, not to be placed in the same category with simple "movable liver," inasmuch as here there was a cause for the displacement within the liver itself.

By far the most valuable contribution to our knowledge of movable liver is the Paris Thesis of Faure (1892). He denies that the elastic cushion formed by the rest of the abdominal viscera plays any but a small *rôle* in the retention of the liver under the diaphragm, a function that they were supposed to possess. This sustaining power of the small intestines was chiefly urged by the gynecologists, notably by Landau,[3] on account of the frequent association with pendulous abdomen, and, consequently, poorly-supported intestines frequently seen in multipara. Faure holds that the true suspensory ligament of the liver is the coronary ligament, or rather the numerous cellular and vascular bands contained between its layers. The most important support of the liver is, according to his view, furnished by the inferior vena cava, and his experiments upon the cadaver seem to support his theory. He found that in the cadaver, suspended in the upright position, a weight of ten kilogrammes could be attached to the liver with a resulting sinking of only one or two centimetres. On attaching a weight of twenty-five to forty kilogrammes, the various ligaments ruptured, the vena cava being the last to tear. When all of the ligaments and the vena cava inferior were left intact, they could support an additional weight of from thirty-five to forty kilogrammes; after section of the vena cava the ligaments could support twenty kilogrammes; while after section of the ligaments the vena cava could support twenty-seven to twenty-eight kilogrammes.

Faure concludes that elongation of the suspensory apparatus may be due to their stretching from the additional weight imposed

[1] Deutsche medicinische Wochenschrift, November 13, 1890, p. 1043.

[2] International Journal of Surgery, December, 1892, p. 332.

[3] Die Wanderleber und der Hängebauch, 1885.

upon them when the lesser means of support by the intestinal mass is lost through relaxation of the abdominal walls. As, however, many women have pendulous abdomens without movable liver, he concludes that there must be some other special predisposing cause for displacement. This he attributes to a badly-defined nutritive condition, which is shown by a tendency of the fibrous tissue readily to undergo distention or elongation. "It is this predisposition which in man causes hernias, in women linea albicantes and eventration, in both varices, movable kidney, enteroptosis, and falling of the liver."

Graham[1] has written an excellent article dealing chiefly with the symptomatology and etiology of the condition. He has collected and tabulated sixty-nine cases from the literature, including three cases observed by himself.

To sum up the points of interest in the case herewith reported: the man had recovered from a fairly severe attack of a wasting fever, which may have been a factor in the production of the condition ultimately found to be present. During life there was found a much depressed lower edge of the liver, temporarily displaced after cathartics, supposed to be due to hepatic abscess or subdiaphragmatic abscess. After death from a purely coincidental cause the liver was found to be not enlarged, and in its normal position. Before any examination of the suspensory apparatus of the liver was made the liver was removed from the body, but the position and direction of the track of puncture, made during life by the aspirating needle, were such as to show that the liver must have occupied an unusual position at the time of puncture. Downward and forward dislocation and a somewhat more marked sinking of the right than of the left extremity of the organ would alone explain the palpable edge in its ante-mortem position and the site and direction of puncture.

It is hoped that the publication of this case of mistaken diagnosis may possibly prevent some similar error, the consequences of which might be more serious than they luckily happened to be in our patient.

[1] Transactions of the Association of American Physicians, 1895, Vol. x, p. 258.

THE NEURON.[1]

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Mr. President and Fellow-Members: An expressed request and the conviction that many of our later-day neurologic terms and phrases, if not unintelligible, are frequently confusing to the student and tend to render uninviting the study of nervous diseases, serve as motives for my addressing you this evening on a subject with which I am certain very many of you are perfectly familiar. I am therefore constrained to ask the indulgence of those to whom I shall present neither new facts nor new thoughts. My endeavor is to render less obscure to others some of our neurologic conceptions and nomenclature.

Until within comparatively recent years, the generally adopted conception of the nervous system was that its essential structure was made up of two distinct morphologic elements, nerve-cells and nerve-fibres, each endowed with peculiar vital properties. With these there were associated the various support elements and blood-vessels. The nerve-cells were supposed to originate, send, receive, and modify impulses. These were conveyed or transmitted from one nerve-cell to another by the nerve-fibres, acting simply as especial conducting agents, and serving to connect nerve-cell with nerve-cell. This transmission of impulses presupposed continuity of structure. Connected with the fibre at one end was a cell for sending impulses, and at the other end a cell for receiving these impulses. The nerve-fibres were thought to be especially concerned in conveying impulses in one direction only, and were therefore designated afferent or centripetal, efferent or centrifugal. Under certain circumstances impulses might be transmitted in either direction. The nerve-fibres were delicate fibrils surrounded by one or more sheaths. The conception of a nerve-cell was not so well defined. It was very variable in size and shape, and possessed of processes of two kinds. The one,—the axis-cylinder process,—thought to remain straight and unbroken, was hypothetically supposed to become continuous with the axis cylinder of a nerve-fibre, though actual demonstration of this was wanting. The other—the protoplasmic processes—were known to break up into numerous

[1] Read by invitation at the Meeting of the Philadelphia County Medical Society, November 25, 1896.

branches soon after leaving the cell body. Their terminations were unknown. Some asserted that they connected cell with cell directly, others that they finally served the same purpose as the axis-cylinder process, and became the integral part of a nerve-fibre.

Later-day investigations, however, particularly those of Golgi, Santiago and Pedro Ramón y Cajal, Kölliker, His, Waldeyer, Lenhossék, van Gehuckten, Dejerine, Retzius, Schaefer, Berkley, and others, have almost revolutionized our neurologic conceptions. The changes that have occurred are, however, in some instances, rather of terms than of more essential particulars. Numerous augmentations have been made to our knowledge of the construction of the nervous system, suppositions have been demonstrated as facts, supposed facts relegated to oblivion, and our ideas concerning neurologic processes much modified. We now know that the nervous system is not made up of a number of nerve-cells maintained in continuity by nerve-fibres, but that it is composed of a multitude of distinct and independent neurologic units, which, following the proposition of Waldeyer, have come to be generally called *neurons.* It is this neurologic unit—*the neuron*—that I propose to discuss.

I have elected to consider briefly its morphology, its physiology, and its pathology. It will readily be conceded that in a limited time one can but allude to a few general facts in connection therewith. Various local peculiarities and modifications will therefore remain unmentioned. I may also remark that in many respects we are hardly beyond the developmental stage. Certain facts have not yet been accorded general acceptance, and theories are numerous and various.

Morphology.

The neurologic unit, therefore, is the *neuron* (Waldeyer), the *neura* (Rauber), the *neure* (Baker), the *neurodendron* or *neurodendridion* (Kölliker). To emphasize the individuality of the *neuron* we will refer briefly to its mode of development (Fig. 1). The elements of the nervous system take their origin in the germinal cells of the epiblast of the embryo. They appear first as spherical cells among the columnar epiblastic elements which form the medullary tube. They increase rapidly and in such a way that, after division, one daughter cell remains as the germinal cell, while the other becomes migratory, moving away from its place of origin, and is said by some to be possessed of ameboid movement. Thus originating they are known as *young nerve-cells* or *neuroblasts.* They soon lose their spherical shape, a protrusion taking place at one point along their periphery. Later they become pyriform. This pointed extremity continues to increase in size, and finally develops into quite an

elongated process of the cell. This is the first indication we have of what we later recognize as the *axon*. From other points along the periphery of the *neuroblast* other processes subsequently develop. It is this entire structure with its subsequent modifications that we recognize as the *neuron*. Each *neuron*, histogenetically a unit, is in reality a modified cell, structurally independent of every other *neuron*, and as such it remains despite its subsequent morphologic complexity.

It is convenient to describe the *neuron* as consisting essentially of three parts: (1) The *nerve-cell* (in a restricted sense), the *neuron body*, the *neurocyte*, or *nerve corpus;* (2) the histogenetic process, to

FIG. 1.

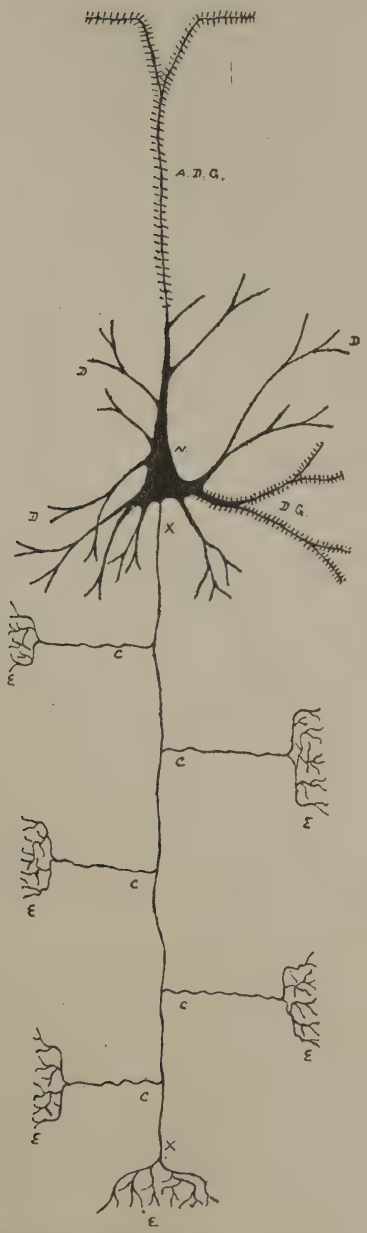
Ontogenetic development of a *neuron* (pyramidal cell of the cerebral cortex) in a typical mammal: *a*, *neuroblast* with primitive *axon* (*ax*) and without *dendrons* (*dendrites*); *b*, commencing *dendrons;* *c*, *dendrons* further developed; *d*, first appearance of *collaterals;* *e*, further development of *collaterals* and *dendrons*. (After S. Ramòn y Cajal.)

which I have alluded, the *neuraxon* or *axon* (Kölliker), *neurit* (Rauber), *axis-cylinder process* or *nerve-fibre process* (Deiters), *nerve process* (Gerlach), *principal process* (Kallius), *neuron*[1] (Schaefer); (3) the distal termination of the *axon*.

The *nerve-cells* are of various shapes and sizes and have received appellations in conformity therewith. They are called unipolar, bipolar,

[1] It is unfortunate that Schaefer, and others following him, in designating the *axon* the *neuron*, have chosen to apply to a part of the neurologic unit a term originally proposed to include the whole. He further proposes to call certain presumably mixed processes of motor nerve-cells of arthropods *neurodendrons*, a term first suggested by Kölliker to replace *neuron*. These suggestions can but lead to needless confusion. The designations employed throughout the text of this article are those which have been more generally adopted.

FIG. 2.



Neuron with long *axon* proceeding as an axis cylinder of a nerve fibre: *n. c., nerve-cell* proper; *d., dendrites; x., axon; d. g., dendrite* showing *gemmulæ; a. d. g., apical dendrite* with *gemmulæ; c., collaterals; e., end tufts.* Pyramidal cell of the cerebral cortex (Golgi's first type).

multipolar, spherical or globular, large or small pyramidal, pear-shaped, fusiform or spindle-shaped, elliptical, bicornuate, angular, and irregular shaped. Of late, suggestions have been made with a view of classifying *nerve-cells* according to the nature of their chromophilic granulations (Nissl), and according to their function (Baker). These resemble other cells in that they contain a nucleus and a nucleolus.

The *axon* is the differentiated histogenetic process of the cell to which I have already referred. Its course after its emergence, so to speak, from the *cell body* varies. It may preserve its individuality unchanged and proceed as the axis cylinder of a nerve-fibre (*inaxon*) (Fig. 2), or at a short distance from its point of origin it may divide and con-

FIG. 3.

Neuron with short *axon* immediately breaking up into numerous fine filaments: *n. c.*, *nerve-cell* proper; *x.*, *axon*; *d.*, *dendrites*. (From the cerebellum. Golgi's second type. After Andriezen.)

tinuously subdivide into irregular filamentous branches and thus exhaust itself (*dendraxon*, Fig. 3). Depending upon the behavior of the *axon* in this respect, the cells are recognized as of two types. The first and more numerous, those with the long *axon*, are known as Deiters's type;[1] those with the *axon* immediately breaking up, as Golgi's type. They are, however, more frequently known, respectively, as Golgi's first and second type of cells. The former are exemplified in the pyramidal cells of the cerebral cortex. The latter are relatively very few, and are found particularly in the cerebellum. Further, it very frequently happens that an *axon*, as an *inaxon*, at a greater or less

[1] To be distinguished from Deiters's neuroglia cells.

distance from the *cell body*, but long before its final termination, divides into two or more similar branches (*schizaxons*). Each of these possesses all the characteristics of true individual *axons*, including their peculiar terminations. The typical *neuron*, and that which is almost exclusively present in all the higher mammalia, has but one *axon* (*monaxon*). In some of the lower animals, on the other hand, there spring from the same *nerve-cell* two or more *axons* (*diaxons*, *polyaxons*). Depending upon the number of their *axons*, *nerve-cells* are called *monaxonic*, *diaxonic*, *triaxonic*, *polyaxonic*.

The *axon* always terminates in a free extermity. Exceptionally this may be a free single undivided filament. It usually, however, splits up into a number of very fine filaments, known as *end tufts*, *end brushes*, *end bushes*, *filamentous arborizations*, *telodendrion* (Rauber). It never ends, as was formerly supposed, by the formation of a filamentous net-work.

The essential parts of each *neuron*, therefore, are the *nerve-cell*, the *axon*, and the *end tufts*. But few of the *neurons*, however, are of such simple type. From both the *nerve-cell* and the *axon* there proceed other processes. Those proceeding from the *nerve-cell* proper are known as *protoplasmic processes* (Deiters), or, because of the tree-like appearance they present, *dendrons* (Schaefer) or *dendrites* (His). They divide dichotomously at frequent intervals. The undivided *dendrite* is frequently spoken of as the *primary* or *parent dendrite*; smaller branches, as *secondary dendrites*. That *protoplasmic process* proceeding from the apex of the pyramidal cells is referred to as the *apical process* or *dendrite*, while those which take their origin from the base are known as *basal dendrites*. "All the pyramidal cells of the cerebral cortex of whatever kind, and very many of the irregular and angular ones, have coming off from their *protoplasmic extensions* (or *dendrites*) short rectangular or oblique *projections* or *gemmulæ*" (Berkley) or *lateral buds*. "On the *apical process* of both the long and short pyramidal cells, the *gemmulæ* are usually simply roughenings on the process near the basal end, higher up they lengthen out and have a bead-like ending. On the thinner branches of the cells, especially those that come off from the basal extremity, they are longer, thinner, and are arranged with considerable regularity, and give to these *dendrites* something of a feathered appearance. Besides the *gemmulæ*, the *nerve-cells* have upon their branches a small though variable number of *varicosities*. On the thicker branches of the *apical processes*, these *varicosities* are never present, but in the finer *dendrites* they are here and there to be met with, particularly at the branchings of the stems" (Berkley).

The processes which proceed from the *axon* usually leave it at

right angles, and are known as *collaterals* or *paraxons*.[1] They are exceedingly fine filaments, morphologically similar to the *axon* itself, and terminate as it does in *branched tufts* (*paradendrion*).

Mindful of the histogenesis of the *neuron*, we have described it as consisting essentially of the *nerve-cell*, the *axon*, and the *end tufts*. The usual description, however, differs somewhat from this, in that it describes the *neuron* as a *nerve-cell*, with processes of two kinds, *axons* and *dendrites*. The former description is, however, preferable. Morphologically and physiologically (as will appear later) the *dendrites* are parts of the *nerve-cell* proper, and structurally are not distinguishable from it. They are split up portions of its periphery. The *axon* is a differentiated process of the *cell body*, readily distinguishable from it and the *dendrites*, and as such has much more individuality than the latter. The *collaterals* are processes of the *axons*, alike to them in structure and in function. The *nerve-cell* proper and the *dendrites*, similar in structure and in function, are therefore distinguishable from the *axons* and *collaterals*, similar in structure and in function. The *dendrites* are wide and thick, of irregular knotty outline. Protrusions of the *cell body*, they divide dichotomously and decrease in calibre as they are traced from it. They all end in free extremities which are either pointed or knob-like. The *axons*, though their thickness is usually proportionate to their length, individually throughout their course maintain an almost even calibre. They are of smooth and regular contour, as are also the *collaterals*. The *axons* take their origin either directly from the *cell body* abruptly, emerging from a short cone-shaped protuberance, or from a protoplasmic process, they arise indirectly near the *cell body*, or exceptionally at some distance therefrom. They become unsheathed and remain so until they end free. The *end tufts* are always free of covering. Many of the *dendrites* are very rich in secondary processes or subdivisions, and are distributed over a comparatively large area. Still it is the *axons* that are noted for their extreme variation in length. Many of them splitting up almost as soon as they emerge from the cell body are less than one millimetre in length. Others extend from the cerebral cortex to the lumbar enlargement, a distance of sixty centimetres, while still others reach from the lumbar enlargement to the feet,—one hundred centimetres.

Thus the investigations of recent years have disclosed the remarkable fact that the entire nervous system is made up of a multitude of *neurons*, which, originating as units, develop and remain as such. Each *neuron* is always structurally unconnected with any other

[1] Retzius has proposed that the *collaterals* be spoken of as *cylindrodendrites* in contradistinction to the *protoplasmic processes* to be known as *cytodendrites*.

neuron. The relation which one bears to another is simply that of propinquity or possibly contact. This relation or association of *neurons*, however, varies greatly (Fig. 4). (1) The *end tufts* of a *neuron* may end free in the periphery,—in a muscle, for instance, as do the *end tufts* of a motor *neuron* whose *neurocyte* is in the ventral horn of the spinal cord. (2) The *end tufts* of one *neuron* may stand in contiguous relation to the *cell body* of another *neuron.* (3) One *neuron* may be in relationship with the *cell bodies* of two or more

FIG. 4.

Illustrating the varying relations of *neurons* to each other: *n. c., nerve-cell; d., dendrites; x., axon; c., collaterals; e., end tufts; m., muscle fibre.* (After Obersteiner. See text.)

neurons by means of the *end tufts* of its *axon* and those of the *collaterals* it may give off. (4) The *end tufts* of one *neuron* may stand in contiguous relationship not with the *nerve-cell* of another *neuron*, but with the terminals of one of its *protoplasmic processes* or *dendrites.* (5) In the last-mentioned instance the *dendrites* of the second-mentioned *neuron* that are not contiguous to the *end tufts* of the first-mentioned *neuron* may be contiguous to the *end tufts* of other *neurons.* By the association of other *neurons* numerous other relation-

ships are accomplished. There are thus produced and recognized *tracks* or *pathways* and *neurons* of various *orders*,—so called. That *neuron* which is in connection with the periphery is known as a *neuron of the first order*, that *neuron* in connection with the latter one and more centrally located as a *neuron of the second order*, etc. (Fig. 5.) It is the manifold and diverse relations produced by the *nerve-*

FIG. 5.

A, sensory *neurons* of different orders: *N. I.*, *neuron of the first order;* 1, peripheral *end tufts* in the epidermis; 2, limit of the epidermis; 3, peripheral centripetal fibre (*dendrite*); 4, common stem; 5, *nerve-cell* of a spinal ganglion; 6, centripetal fibre (*axon*); 7, limit of the spinal cord; 8, 9, divisions of fibre 6 into ascending and descending branches; 10, *collateral* with end tufts 10′; *N. II.*, *neuron of the second order;* 11, *nerve-cell;* 12, *axon*. *B*, motor *neurons* of different orders: *N. I.*, peripheral motor neuron or neuron of the first order; *N. II.*, motor neuron of the second order; 1, *nerve-cell* of the latter; 2, the *axon;* 3, 4, *collaterals;* 4′, *end tufts;* 5, *nerve-cell* of the *neuron* of the first order; 6, *axon;* 7, limit of the spinal cord; 8, striated muscle fibre; 9, *end tufts* of the motor end plates. *C*, second form of association between *neurons* of different orders: *N. I.*, peripheral sensory *neuron* or *neuron* of the first order (olfactory cell); 1, *cell body;* 2, *axon;* 3, limit of the lobe; 4, *end tufts;* 5, terminals of the dendrite 6 of *N. II.*, *neuron* of the second order; 7, *cell body;* 8, *axon*. (After Rauber.)

cells and their *dendrites*, on the one hand, and the *end tufts* of the *axons* and *collaterals*, on the other, that bestow upon the nervous system its structural and functional complexity. Without regard to its topographic situation there is no one part of the nervous system that is not in relation with every other part. There is no one part that functionates absolutely independently of every other part.

Physiology.

The most important function of the *neuron* is that of self-preservation, effected by the absorption and assimilation of nutritive material. All the other functions of the *neuron*, ranging from the productive activity of the *neuroblast* whereby it grows and alters its conformation to the execution of the most complex mental process, presuppose the integrity of this all-essential function of self-preservation. The nutritive material comes indirectly from the blood, and is taken up by the *neuron* from the lymph-spaces which pervade the entire nervous structure, filling up the interstices between the minutest filamentous ramifications. There is good reason for the supposition that the *cell body and the dendrites* are actively concerned in the process of absorbing nutritive material. It is further confidently asserted by some that there is a stream (?) of nutritive material from the *dendrites* towards the *neurocyte*, and that because of this and the relative smallness of the *cell body* the *dendrites* may to a certain extent, but only to a certain extent, be looked upon as the nutritive organs of the *neuron*. And, again, it has been suggested that the *gemmulæ* subserve this purpose, although other—nervous—functions (as will appear later) have also been ascribed to them. The nutrition of the *axon* is more especially accomplished during its course, and in particular at the Ranvier nodes or constrictions.

Intimately associated with this question of nutrition is that which concerns itself with the trophic influence which has long been known to be exercised by the nerve-cell over the nerve-fibre, so-called. Since the establishment of the doctrine of the unity of the *neuron* this question is more easy of comprehension, although the exact *modus operandi* of the trophic influence is in many respects still to be determined. One part of the unit may not suffer without the entire *neuron* being more or less implicated. Suffice it to remark the well-known occurrence of degeneration (Wallerian) of the *axon* sequential to its separation from its *neurocyte*, and the more recently demonstrated fact that when the *neuron* is thus damaged the *nerve-cell* undergoes retrograde changes to a more or less extent. These changes have been especially studied in connection with the spinal cord *nerve-cells* of motor *neurons* after amputations of extremities.

In considering the more particularly nervous functions of the *neuron*, we may serviceably commence with the supposition that all manifestations of nervous energy are, in a certain sense, reflex. By this we mean that a *nerve-cell* of itself is not capable of engendering nervous manifestations, but rather that what we appreciate as manifestations of nervous energy are the resultant of the operation of some external force on a *nerve-cell* or *cells*. The external in this sense includes everything external to the *neuron* or *neurons* under consideration, be it in the immediate vicinity, or at a certain distance removed, or external to the animal itself.

The parts of the *neuron* concerned in the reception of impulses are the *nerve-cell* and the *dendrites*, these latter, therefore, subserving the double function of nutrition and reception of impulses. And it is particularly the *gemmulæ* that are said to be actively concerned in this process. It is with the knob-like extremities of the *gemmulæ* that the fine *end tufts* of the *axons* are in contiguous relationship, twining around them. The function of the *gemmulæ* is, therefore, to receive the nervous impulses from the *terminal tufts* of the *axon*, which are also provided with short rectangular protrusions thought to end knob-like. The *gemmulæ* transmit the nervous impressions to the *dendrites*, whence they are conveyed to the *cell body* proper. The molecular play which we commonly designate nerve-current, and which is usually said to proceed in a wave-like fashion, in the *dendrites*, therefore, travels from the periphery towards the centre. The *dendrites* are, therefore, said to convey impulses *cellulipetally* or *cellipetally* (*axopetally*). But the nervous impulse may be transmitted by the *end tufts* of the *axon* directly to the *cell body* proper, without the intervention of any *dendrites*. So that, structurally alike, the *nerve-cell* and the *dendrites* are also functionally allied, being nutritive organs and organs for the reception and further propagation of impulses. The state of excitation which is hereby engendered in the protoplasm of the *nerve-cell* is further transmitted throughout the *neuron*. Supposing the *neuron* under consideration to be a motor *neuron*, whose *neurocyte* is in the ventral horn of the spinal cord, the excitation being transmitted to a voluntary or involuntary muscle causes contraction of it. The transmission of the impulse from the *nerve-cell* to the muscle is effected by the *axon*, which thus serves as a *cellulifugal* or *cellifugal* conducting apparatus. The impulse is delivered to the muscle fibres by the terminals of the *axon*, which, in order that it may distribute the impulse over a large area, divides before its termination in numerous fine filaments, the *end tufts*. These latter, therefore, serve as *organs* of *emission* or *deliverance* for the impulse. The collaterals functionate as do the *axons*.

These, then, are the functional facts that obtain in all *monaxonic neurons*, such as are almost exclusively present in the vertebrates. Proceeding from the *axon*, however, just at its point of emergence from the *nerve-cell*, there are certain fine fibrils (Golgi's). These are assumed to receive and transmit impulses cellipetally (as do the *dendrites*), and to be especially concerned in the execution of reflex activ-

FIG. 6.

Semidiagrammatic representation of the cerebral cortex: *gl.*, glia stratum; *I.*, molecular layer; *II.*, layer of small pyramidal cells; *III.*, layer of large pyramidal cells; *IV.*, layer of polymorphous cells; *m.*, medullary layer; 1, 2, 3, various pyramidal cells; 4, 5, upper cells of small pyramidal layer; 6, cell of polymorphous layer; 7, cell with axon proceeding upward (Martinotti's); 8, Golgi's cell (second type); 9, small cell of molecular layer; 10, Cajal's cell with axon parallel to free surface of the brain; 11, axon coming from the medullary layer; 12, 13, glia cells; 14, 15, superficial glia cells; *X*, axon. (After Obersteiner.)

ities (Lenhossék). They are therefore designated *axodendrons*, in contradistinction to the *collaterals* (Ramón y Cajal's fibrils) (*paraxons*) which transmit impulses as do the *axons*, cellifugally.

The conception of these fundamental principles may be facilitated by a brief reference to the construction of the cerebral cortex.

These recent investigations have shown the cerebral cortex to be made up of four rather indefinitely defined layers (Fig. 6):

(1) The molecular layer.
(2) The layer of small pyramidal cells.
(3) The layer of large pyramidal cells.
(4) The layer of irregular or polymorphous cells.

In the outermost or molecular layer there are a few small irregular or fusiform cells whose *axons* run parallel with the free surface of the brain. In the second layer, besides the small pyramidal, are a varying number of bicornuate and irregular or angular cells, the majority of whose *axons* turn downward. In the third layer there are scattered among the large pyramidal a few irregular-shaped cells. The *axons* of all the cells of this layer take a downward course. The *apical dendrites* of most of the pyramidal cells of this layer extend to the middle of the molecular layer, where by repeated fission they form a very intricate net-work just below the surface of the brain. The *dendrites* of the irregular cells, extending rather laterally than vertically, pursue a very irregular course. None of them reach as high as do those of the pyramidal cells. In the fourth layer, just external to the medullary white layer, are polymorphous cells. Some of them are pyramidal in shape, but they are mostly irregular. The *apical processes* of the pyramidal cells and of a few of the irregular ones extend upward, their *axons* downward. The *axons* of most of the irregular cells of this layer, however, are upturned; their *dendrites* extend in all directions. The *axons* coursing through the cortex, giving off numerous *collaterals*, finally reach the molecular layer, where they are lost. The fibres, in reality *axons* and *collaterals*, coursing through the cortex proceed in either of two directions: *radially* or *tangentially*.

Those proceeding radially between the nerve-cells are either *axons* of the pyramidal and polymorphous cells, coursing cellifugally[1] (centrifugally or corticofugally), or they are *axons*, which coming from the medullary lamina proceed centripetally or corticopetally (but cellifugally), reaching in the majority of instances the molecular layer, where they terminate in aborescent filamentous *end tufts*. These are the *axons* of distant cells, of other cortical areas of the same or of the opposite half of the brain, or of lower gray masses of

[1] Formerly impulses were said to be transmitted centripetally or centrifugally, depending upon whether or not they were transmitted towards or away from the nerve-centres. Their direction of transmission is now frequently specified with regard to the *nerve-cell* of the *neuron* which conveys them. They are transmitted cellulifugally or cellifugally by the *axons*, and cellulipetally or cellipetally by the *dendrites*. An impulse, therefore, for instance, which is transmitted cellifugally may be transmitted either centrifugally or centripetally, etc.

the brain and spinal cord. The tangential fibres are (1) the *axons* of cells located in the molecular layer, (2) the terminals of *axons* of cells of lower laminæ, which have turned upward, (3) the terminations of the *dendrites* of pyramidal cells, and (4) the terminals of those *axons* which coming from the medullary layer course radially through the cortex and reach the molecular layer, where they are lost.

Thus is evident the anatomic arrangement whereby impulses may be transmitted from one part of the brain to other parts. When to the associations already indicated we add those produced by the numerous *collaterals* which the *axons* give off, we conceive how, without regard to its topographic situation, every part of the nervous system is in direct association with many and distant parts, how one part may not functionate independently of other parts. When we study the intimate and intricate net-work produced by the ramifications of the *axons*, *collaterals*, and *dendrites*, the necessity of some arrangement whereby diffusion of impulses may not occur, is evident. This is provided for by the unsheathing of the *axon*, *collaterals*, and even *dendrites*, it is asserted. The *axon* is ensheathed from its exit from the *nerve-cell* until just before it breaks up into the *end tufts*. These latter, that they may deliver the impulse, are always free of covering. It is quite probably a physiologic impossibility that naked *axons* should exist in any great number in the cerebrum or elsewhere. Were they uncovered, from the frequency with which they touch and retouch, there would be a constant overflow of stimuli from one to another, impulses would quite as frequently go in the wrong direction as in the right, and there would ensue a consequent incoordination, not only of motion, but likewise of sensation and of thought.

The multiplicity of the processes of the *neuron*, and the fact that very many necessarily come in contact with each unit, give rise to the supposition that a *neuron* does not react to all sorts of stimuli which may be brought to or near it; but rather that it is disposed, so to speak, to impulses of certain kinds, and responds only to them. This supposition is borne out by the fact that the experimental or therapeutic exhibition of certain drugs is followed by evidences of their action on certain *neurons* only, whereas others are apparently unaffected.

Thus the *neuron* with its ramifications pervades all parts of the nervous system, and the association of a multitude of *neurons* constitutes the nervous system. Without doubt the most important part of the *neuron* is the *nerve-cell* with the *dendrites*, being the nutritional, trophic, receptive, and impulsive elements. The *nerve-cell* has been aptly called the *vital part* of the *neuron*. The *axons*, *collaterals*,

and *end tufts*, outgrowths of the *cell body*, are of secondary importance. They conduct and deliver impulses to neighboring regions. The processes of the *neuron* are, as it were, projections of the *cell body* into the various motor and sensory regions of the body. We are still theorizing as to the ultimate nature of the conducting medium, whether it be fluid, semifluid, or fibrillar. Indications, however, seem rather to favor the latter view. There is set up in a *neuron* a certain kind of molecular motion which is recognized as a state of excitation. This, as an impulse, is propagated in an undulatory manner along the *axon* to its *end tufts*. Here, after a manner of induction, a state of excitation is engendered in another *neuron*, and this may be brought about directly, or in the lymph surrounding the *end tufts* of the *axon* there may be set up certain complex chemical changes, which in turn serve to excite the neighboring *dendrons* or *dendrites*. The excitation thus engendered in the second *neuron* need not necessarily be of the same character as that present in the first-mentioned *neuron*. Indeed, the nature of nervous processes is much more fitly explained upon the supposition that these induced impulses differ in nature from those which gave rise to them, than upon the assumption of an unbroken transmission of impulses unchanged in character from inception to deliverance.

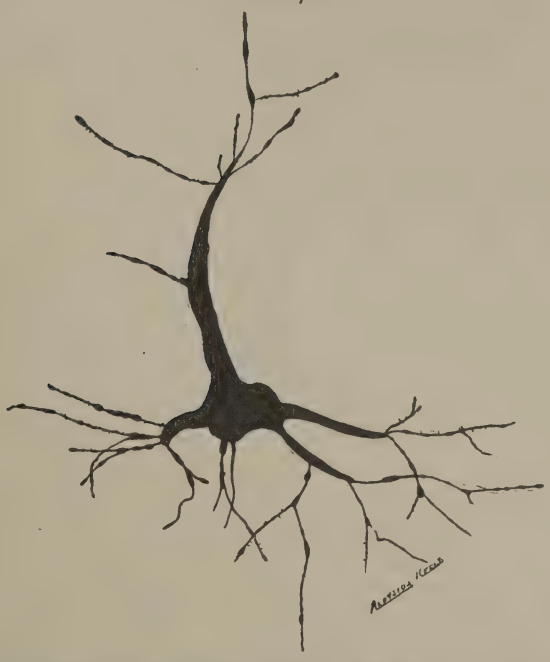
Considering the physiology of the *neuron*, we must briefly refer to an alluring theory (Duval, Lépine, Röbl-Ruckhard, Dercum) lately advanced to explain the phenomena, not only of normal sleep, but also of hysterical, hypnotic, and other functional states, and which may also serve to account for certain morbid manifestations,[1] the nature of which we do not understand. It is that which contends that the *neuron* is not an absolutely fixed morphologic element, but that it is capable of motion, which is probably ameboid in character. This theory seems to have some basis in fact, unstable, as yet, though it be. The *neuron* is supposed to be capable of extending and retracting at least its terminals. With properly extended terminals, the various *neurons* stand in that relation to each other which is necessary for the execution of their physiologic functions. With retracted terminals, impulses cannot pass from *neuron* to *neuron* functionally allied, and functional activity of necessity ceases. An adaptation of this theory has been adduced to explain the mental activities. More recently it has been suggested that the *glia-cells* play an important *rôle* in such operations.

[1] Kelly: Essential Paroxysmal Tachycardia; Medical and Surgical Reporter, October 24, 1896.

PATHOLOGY.

By employing the same means of investigation—the bichromate of silver stain—which has opened up this heretofore unknown domain and revealed the facts to which I have alluded, we have been enabled to discover pathologic changes affecting the *neuron*, of course, until lately unknown and totally unsuspected. They will be but briefly referred to. The changes produced, experimentally,

FIG. 7.[1]



Drawing illustrating irregular swellings or tumefactions of the *dendrites*, with loss of the *gemmulæ* of a pyramidal cell of the cerebral cortex; early stage of degeneration.

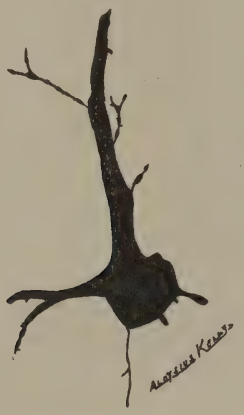
have been especially studied by Berkley, and those found in insanity by Andriezen. Many other investigators have recorded other observations. The *dendrites* and the *cell body* are most susceptible to the morbific influences of various agencies; the *axons* being apparently quite resistant. There have, however, as yet been discovered no distinctive changes or alterations characteristic of any diseased process. We have found in acute infection[2] pathologic changes similar to

[1] Burr and Kelly: Lesions of the Brain found in a Case of Acute Yellow Atrophy of the Liver; Journal of Nervous and Mental Disease, November, 1896.

[2] Ibid.

those discovered experimentally and in insanity. These changes commonly consist, at first, in a swelling and subsequent disappearance of some or of all of the *gemmulæ*. The *dendrons* become affected, —are the seat of irregular or moniliform swellings or tumefactions. The *varicosities* become increased in size and in number. These are the early degenerative changes (Fig. 7). Later the *gemmulæ* entirely disappear, the moniliform swellings of the *dendrites* become larger and more numerous, the *cell body* presents similar changes, and finally the *dendrites* begin and continue to progressively atrophy and disappear. (Fig. 8). By other methods of staining (Nissl) more minute changes

FIG. 8.[1]



Drawing illustrating atrophy and disappearance of the *dendrites;* late stage of degeneration.

affecting particularly the *cell body* are discernible. But these will not be discussed. Various so-called system diseases of the nervous system are now known to be due to disease of *neurons* functionally allied,—a system of *neurons*. We now know why a degeneration, for instance, of the pyramidal tract of the cortical *projection neurons* ceases in the spinal cord, a fact which, when the continuity of nerve cells and nerve fibres was believed in, was hardly satisfactorily explained. The farther distant from the *nerve-cell* the less resistant being the processes, we readily conceive how peripheral neuritis (or paralysis) is caused by various toxic agents, alcohol, arsenic, or the poison circulating in the blood in diabetes, diphtheria, etc. These histologic discoveries have not been without their bearing on the theories adduced to explain mental activities, and have been especially adopted to

[1] Burr and Kelly: Lesions of the Brain found in a Case of Acute Yellow Atrophy of the Liver; Journal of Nervous and Mental Disease, November, 1896.

account for the phenomena of paralytic, alcoholic dementia. "Once the *gemmulæ* lose their vitality, or in any way become diseased, conduction of nerve impulse is no longer possible, and the co-ordination of the cellular elements ceases. Confusion of thought is at first the result, then as the morbid process grows deeper and more wide-spread co-ordinated thought almost entirely ceases, and a terminal dementia follows as a natural result" (Berkley).

In pursuance of further investigations, other disclosures are confidently anticipated in the near future. The veil enshrouding these realms is but lifting, and we are peering but down the corridors of this hidden unknown.

ALUMNI NOTES.

One Commencement.

At a meeting of the Board of Trustees of the University of Pennsylvania, held on December 8, 1896, it was decided that in the future there shall be but one commencement day for the conferring of degrees in all departments of the University. Formerly but one day was set apart for the exercises of all the departments, but as the number of graduates and students increased to such an extent that it was difficult to accommodate them and their friends, it was thought advisable to make a separation, having the exercises of the graduates of the College and of the Departments of Law and of Philosophy on one day, and of the Departments of Medicine, Dentistry, Auxiliary Medicine, and Veterinary Medicine at a different time. This latter plan has been the custom for the last ten years. The objection to this plan was that it led to the belief among some that the University is not one whole composed of many parts, but rather several distinct institutions having a relation only in name. To correct this erroneous impression it has been thought best to observe but one day for University Commencement Day.

One effect of the action of the Trustees will be to bring into prominence the procession of the officers, professors, and students from the campus to the Academy of Music. A practical demonstration of this plan was attempted on a large scale for the first time last year, but owing to the inclement weather the procession disbanded on the University grounds shortly after its formation, the

participants being compelled to reach the Academy in carriages or cabs and street-cars. More than the usual attention will be given to this part of the exercises this year. Instead of only about half the students forming in line there will be more than 2500 in the procession, some 800 of whom, being graduates, will be dressed in caps and gowns. Besides these there will be the trustees, professors, graduates, and invited guests, with their gowns decked with the colors representing the degrees they hold.

The exercises of the One Hundred and Forty-first Annual Commencement will be held in the American Academy of Music, Wednesday, June 9, 1897.

Meeting of the Northwestern Alumni Association.

The Second Annual Meeting of the Northwestern Alumni Association was held November 19, at the Hotel Ryan, St. Paul, Minn. It was announced that Dr. J. L. Rothrop, '88 Med., had been appointed State Examiner for the Medical Department by the University, and A. J. D. Haupt, '82 C., State Examiner for the Arts and Science Department. The election of officers resulted as follows: Dr. David R. Greenlee, '67 Med., of Minnehaha, president; Dr. H. L. McKinstry, '70 Med., of Redwing, first vice-president; Dr. H. A. Tomlison, '80 Med., of St. Peter, second vice-president; Rev. Alexander J. D. Haupt, '82 C., of St. Paul, secretary, Wade H. Yardley, '85 Law, of St. Paul, treasurer.

This is one of the most energetic of the Pennsylvania Alumni Societies; its membership consists of fifty-two, of which thirty-one are residents of St. Paul and Minneapolis.

Meeting of the Athletic Association.

The Annual Meeting of the Athletic Association was held on December 8, 1896. The report of the treasurer for 1895–96 is substantially as follows:

The profit and loss sheet shows a deficit of $6087.41. The outstanding accounts for the year make the deficit $3048. The expenses for the foot-ball team amounted to $19,119; for the base-ball team, $6813; for the crew, $3770; and for the other athletic teams of the University, about $17,000.

On the credit account the receipts for the foot-ball team are $33,446; from the base-ball team, $2110; from the crew, $3076; and from other branches of athletic, $8334.

The building fund, which is in charge of a separate committee, for the improvement of Franklin Field, has a balance of $5324; hav-

ing expended $1000 upon the field in the way of a new track and sodding the ball-field.

A Third Edition of the Early History of Pennsylvania.

Through the generosity of Charles Hare Hutchinson, Class '52, a third edition of the Early History of the University of Pennsylvania, by Dr. George B. Wood, '95, has been published, with supplementary chapters, by Dr. Frederick Stone, the librarian of the Pennsylvania Historical Society. According to the supplement the date of the founding of the University of Pennsylvania is 1751. The book is profusely illustrated with portraits of the early professors and benefactors of the University, and with *fac-similes* of documents connected with its history.

Appointments.

The following appointments have been announced : Dr. Herman B. Allyn, visiting physician to St. Joseph's Hospital, Philadelphia; Dr. John B. Shober, obstetrician to the Philadelphia Hospital; Dr. A. A. Stevens, professor of Pathology in the Woman's Medical College of Pennsylvania.

Dr. Aloysius O. J. Kelly (Class of '91) has been elected adjunct professor of Pathology in the Philadelphia Polyclinic and College for Graduates in Medicine.

Necrology.

Ex-United States Senator John Scott, a member of the Board of Trustees of the University of Pennsylvania, died in Philadelphia, on November 30, 1896.

Dr. Alfred J. Martin died in Allentown, Pa., on December 9, 1896. He received his medical degree from the University in 1857, and since then he practised his profession until the day before his death. In 1878 he was elected Mayor of Allentown. In 1880 he was a presidential elector. He was for a number of years a trustee of St. Luke's Hospital, Bethlehem, and was at the time of his death one of the consulting physicians of that institution.

Dr. John Seibert, of the Class of '45, died on November 13, 1896.

Dr. P. T. Williams, of Baltimore, died November 22, 1896.

Dr. Michael Wall, Class of '76, died at the City Hospital, Charlottetown, P. E. I., November 13, 1896. The interment was at Kinkora.

EDITORIAL.

THE SERUM DIAGNOSIS OF TYPHOID FEVER.

The researches of Charrin, Metschnikoff, Pfeiffer, and Grüber upon acquired immunity have paved the way to a discovery which bids fair to prove of considerable value in the recognition of obscure cases of typhoid fever. In the spring of 1894 Pfeiffer described a peculiar reaction which is brought about when cholera vibrios are mixed with the blood-serum of an animal immunized against cholera and are then injected into the peritoneum of a guinea-pig. An examination of the peritoneal fluid within an hour after the injection shows that the vibrios have lost their motility, and have agglomerated together into highly refractile, spherical clumps. In the fall of the same year the same observer demonstrated that typhoid bacilli reacted similarly under like conditions, and could thus be distinguished from colon bacilli. In 1895, Bordet, and later Grüber, pointed out that the reaction would occur when serum obtained from a typhoid fever patient was added to a culture of typhoid bacilli contained in a test-tube. The latter discovery simplified matters considerably, since it showed that the experiment could be carried on successfully outside the body of a living animal.

To Widal (*Semaine Médicale*, June 26, 1896) belongs the credit of suggesting the practical value of these discoveries in the recognition of typhoid fever. He found that the blood of typhoid patients contained as early as the seventh day certain specific substances which exercise a characteristic effect on living typhoid bacilli; and that if a drop of blood-serum from such a patient be added to a culture of bacilli, in a short time the latter agglutinate in clumps and lose their motility. This observation became all the more important when it was found that in no other disease does the blood-serum give a similar reaction with typhoid bacilli.

To demonstrate that the reaction was peculiar to the blood-serum of typhoid fever subjects, Widal made observations on the serum of patients suffering from other diseases, and for this purpose he obtained serum from cases of acute and chronic nephritis, tuberculosis, pleurisy, pneumonia, catarrhal jaundice, cirrhosis of the liver, and acute rheumatism, and also from five patients having had typhoid

fever, one, four, five, nine, and fourteen years previously, and he found in all of these cases that Eberth's bacillus remained unaffected. Comparative observations on the bacillus coli communis also gave negative results.

Wyatt Johnson, of Montreal, has proposed the following simple method of demonstrating the reaction: A drop of blood from the ear or finger-tip of a typhoid patient is placed on a clean glass slide and allowed to dry. A loopful of a watery solution of this dried blood is added to a loopful of pure bouillon culture of typhoid bacilli placed on a clean cover-glass; the latter is now inverted over the concavity of a glass slide and sealed at the edges with vaseline. When viewed with a one-twelfth oil-immersion lens the characteristic clumping is observed to take place in from a few minutes to an hour. The specimen of dried blood can be kept for several days and still give the reaction. The only feature that in any way detracts from the value of the discovery is the failure to obtain the reaction, in most instances, before the appearance of the typhoid eruption.

At the Laboratory of the New York Health Department the blood of thirty-four cases of typhoid fever was tested in the above way, and in only one case did the clumping of the bacilli fail to occur, and in this instance the blood was from a patient who had been convalescent for forty days.

In the Army Medical Museum at Washington the blood of twenty-eight cases of suspected typhoid fever was examined; of these, twenty-two gave positive and six negative results. In two of the negative cases the malarial parasite was subsequently found in the blood; in a third case the autopsy revealed general peritonitis, secondary to appendicitis; a fourth case, a child, had probably tubercular meningitis; the two remaining negative cases were considered to be suffering from diseases other than typhoid fever.

In view of the confirmation of Widal's discovery the health departments of several cities, including New York, Chicago, and Washington, have already placed at the disposal of local practitioners facilities for carrying out the bacteriological test.

The verification of this discovery by competent observers, both in this country and abroad, indicates that we are in possession of a certain means of detecting typhoid fever from such diseases as remittent fever, simple continued fever, general miliary tuberculosis, appendicitis, and mountain fever.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

Tuberculosis in the Aged.

Barie (*Revue de Médecine*, 1896; *Centralblatt für innere Medicin*, No. 43, 1896) details the results of his statistical inquiry into the occurrence of tuberculosis in the aged. During ten years, from 1884 to 1893, there died of tuberculosis in ten of the large Parisian hospitals 2202 persons between 60 and 92 years of age. The pulmonary lesions are similar to those found in adults, with the more frequent occurrence of various secondary manifestations, such as bronchitis with or without dilatation of the bronchi, emphysema, and induration of the lung. Chronic and acute forms are recognized. In about one-third of the former there is albuminuria; in certain cases diminution of urea and increase of chlorides and phosphates. In the symptomatology are particularly noted the absence of fever, the presence of but slight cough, the infrequency of hemoptysis, and the slight dyspnea unless emphysema or induration of the lung is at the same time present. Digestive disturbances are frequent; night-sweats, chest pain, and the phthisical habitus not so. The physical signs are often obscured by those of emphysema or bronchitis. The affection usually pursues from the beginning a chronic, slowly progressing course, often with remissions. There sometimes occur cessations in the progress of the disease, which may persist for years, when it will again further develop either acutely or chronically.

Essential Paroxysmal Tachycardia.

Kelly (*Medical and Surgical Reporter*, October 24, 1896) reports four cases, the essential feature of each of which is paroxysmally recurring attacks of extraordinary rapidity of the heart's action occurring without adequate obvious cause, predisposing or exciting. The ages of the patients—two males and two females—range from 22 to 60 years. At the time of the onset of the affection their ages varied between 14 and 50 years, and the disorder has lasted in the individual cases from three to twelve years. The attacks are of varying frequency, severity, and duration. They may occur once a month, twice a week, or several times a day. Many of the attacks are accompanied by great prostration, and frequently by manifest signs of vaso-motor paralysis. They may last from a moment to three weeks. The heart-beat of three of the patients during the paroxysms was usually 200 or more; of one patient, 135. These paroxysms develop with marked suddenness, and terminate usually as rapidly as they develop. They are unaccompanied by any

marked dyspnea or cardiac pain or distress. Particular attention is directed to the fact that in none of the cases was it possible to discover any cardiac lesion whatever. In two of the cases in which the area of cardiac dulness was determined during paroxysms it was found normal, as it was also between the attacks. A distinction is made between symptomatic or reflex tachycardia and so-called essential tachycardia, and the causes of the former given. There is excluded the probability of essential tachycardia being due to stimulation of the sympathetic, disturbance of the intracardiac ganglia, or disease of the heart-muscle. And it is further shown that it cannot, as Martius contends, be due to enormous acutely-occurring dilatation of the heart and a consequent increase of the frequency of the cardiac contractions to compensate for their weakness. It is, therefore, a vagus neurosis. The theory of the motility of the neuron is adapted to explain the phenomena of the disorder. The symptom-complex of the disorder is so characteristic that, with a knowledge of the possible presence of the affection, coupled with an otherwise negative result of an examination of the patient, one could hardly mistake it for anything else. Angiospastic dilatation of the heart and vaso-motor ataxia, one of the manifestations of which may be tachycardia, must be excluded in making a diagnosis. The treatment of the disorder is symptomatic. Particular attention should be paid to the general nutrition and welfare of the patient.

Acute Fatal Dilatation of the Stomach.

Albu (*Deutsche medicinische Wochenschrift*, No. 7, 1896) reports the case of a man, aged 26 years, who had an attack of scarlet fever of long duration, characterized especially by severe throat manifestations and marked cardiac weakness. Four days after the subsidence of the fever, the patient in good general condition, there occurred severe vomiting, which was frequently repeated, and for which no cause could be assigned; particularly was there no dietetic indiscretion. The patient's general condition became much worse, the vomiting continued, the pulse became weak and small, and the patient stuporous. The following morning there developed great distention of the abdomen, especially in the upper part, and pain in the same region. Vomiting ceased. Lavage of the stomach was instituted, but the patient grew rapidly worse and died. The noteworthy lesions at the necropsy were myocarditis, nephritis, and a great dilatation of the stomach. There was no gastric ulcer, cicatrix, or stenosis of the pylorus. The case is thought to be one of those rare ones due to a central paralysis, the other cause of acute dilatation of the stomach, dietetic indiscretions, being excluded. The cause of the paralysis is supposed to have been toxic, sequential to an acute infectious disease. The cerebral manifestations, apathy, somnolence, and delirium are referred to the action of toxins engendered in the stomach by decomposition of its contents.

Percussion of the Spine.

Bechtereff (*Gazzete degli Ospedali*, August 4, 1896; *British Medical Journal*, October 24, 1896) draws attention to the diagnostic importance of percussion of the sacral regions in certain cases, as shown by the following instance: A patient was admitted under his care with symptoms of compression of the cauda equina. There was plantar and perineal anesthesia, spontaneous pains in the joints, etc., pain on percussion of the sacral region, and the sphincters were affected. The history was that the patient had suffered from a severe contusion in the lumbar region in falling from a horse eight months previously, and for the last

six months the symptoms had been gradually increasing, till at the time the case came under observation there was considerable hectic. On account of the grave condition of the patient and his severe suffering it was decided to perform a laminectomy. This showed considerable caries of the sacrum, with caseating material compressing the cauda. After the operation the pain and anesthesia disappeared, but the condition of the patient prevented his ultimate recovery. Post-mortem examination showed tuberculosis of the sacrum, suppurative prostatitis, and tuberculous pyelitis. During life percussion of the sacral region gave a marked dull note, while in the healthy condition percussion of the triangular-shaped area which has for its base the upper part of the sacrum, and for its apex the coccyx, should give a slightly resonant note. In the case just quoted the dulness corresponded exactly with the tuberculous mass found post mortem.

The Cerebral Complications of Raynaud's Disease.

Osler (*American Journal of the Medical Sciences*, November, 1896) refers to the fact that Raynaud's disease may complicate many diseases of the nervous system, particularly hysteria; further, epileptic dementia, acute mania, hydrocephalus, syringomyelia, and locomotor ataxia. He then refers to one case already reported, and reports two others. The case already reported was of a man, aged 26 years, who for six winters had had attacks of Raynaud's disease affecting the hands, feet, nose, and ears. He had also hemoglobinuria. The cerebral complications were severe epileptic convulsions occurring only when the local symptoms were present. The second case was that of a woman, aged 48 years, who for five or six years had had occasional attacks of numbness with mottling of the fingers. In April, 1891, she had an attack of dizziness and perhaps transient loss of consciousness; a month later a second attack, with pain and local asphyxia in the little and ring-fingers of the right hand. In January, 1892, a third attack of dizziness, accompanied with asphyxia and superficial necrosis of the terminal phalanges of the index and little fingers of the right hand. A fourth attack on February 2, with aphasia, loss of power in the right hand, and with paresis of the right foot; rapid recovery. On March 31, a second attack of complete aphasia, with spasm in the right hand. Good health until the summer of 1894, when she had slight pain and aching in the right leg and toes. In February, 1895, local asphyxia, necrosis of terminal phalanx of middle finger of right hand. On April 4 severe attack, with headache and slight paralysis of the left arm and leg, severe local symptoms in the right hand and fingers. On July 19, a third attack of aphasia, with right hemiplegia, local syncope, and asphyxia in right hand and fingers. In January, 1896, intense pain in the right hand, rapidly developing gangrene extending to the elbow; coma; death. The third case, possibly of the nature of Raynaud's disease, was of a girl, aged 13½ years, who had painful swelling of the legs between the knees and ankles, recurring for two and a half years; falling attacks of doubtful nature, possibly hysterical.

A New Auscultatory Sign in Connection with Mediastinal Affections.

Perez (*British Medical Journal*, September 19, 1896) describes what he regards as a new auscultatory sign, which he discovered in a patient of his who for nine years had been subject to attacks of mediastino-pericarditis. The most remarkable sounds were audible over the whole length of the sternum, over the suprasternal notch, and along each side of the sternum when the patient raised

either arm from the side to the vertical position over her head, and again when she lowered it from that position. These sounds were independent of any friction synchronous with the heart's action, or with inspiration or expiration. The most probable explanation of the production of the sounds seemed to be that the elevation and lowering of the arm moved the main vessels of the arm, and to a less extent also the arch of the aorta, and that this movement of the vessels dragged upon adhesions situated round the vessels external to the pericardium, and so produced the crackling sounds.

DAVIES (*British Medical Journal*, November 28, 1896) mentions two cases, one of valvular disease of the heart and adherent pericardium, the other of aneurism of the first part of the arch of the aorta,—in both of which these friction sounds were audible. They were heard upon the side of sternum corresponding to the arm raised or lowered. These sounds were not audible during inspiration, nor were they synchronous with the heart's action, and they are likewise supposed to be due to stretching of adhesions about the vessels external to the pericardium.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

A Review of the Surgery of the Peritoneum.

TREVES (*British Medical Journal*, October 31, 1896) says that within the last few years the tendency of many surgeons has been towards the development of an elaborate technique to attain the so-called "strict antiseptic precaution," and the object gained, although of no practical value, has sacrificed much which should have been applied to the actual safety of the patient.

The surgical ritualists appeal to the infallible tests of the bacteriological laboratory, and bring forth, as conclusive evidence, an array of cultivations and inoculated tubes. Most English surgeons, on the other hand, are content to appeal to the test of the patient, and to bring forth records of results.

The work in the operating theatre comes up for criticism a week or more after it is done. An operator in fishing-boots, nurses with their hands and arms wrapped up in special towels, and a hose playing about the floor of the theatre, may form an impressive sight, but to what degree does it bear upon the interest of the patient?

There is the amplest evidence that these extravagant and almost grotesque preparations for the operation are unnecessary; for that evidence demonstrates that such formulæ give in no one class of operations a better result than do the simpler methods with which we are familiar.

At present the actual handling of knives and forceps is overwhelmed by the dexterous disposal of the basin and soap-dish.

The technique, as carried out by the author, is as follows: The operating-room is clean and free from dust, and there is nothing peculiar in the construction. The

table is of wood. It is not bacteriologically clean, but it is handy to the surgeon and comfortable for the patient,—two points worthy of some consideration. Some time before the patient enters the operating room the skin of the abdomen is shaved, well washed with soap and water and then with ether, and is finally covered with a thick compress soaked in a 1 : 20 carbolic solution, which is kept in position at least five hours before the operation. The surgeon is clean, but does not parade his cleanliness. The mackintoshes and blankets which envelop the patient are, in a domestic sense, clean. The towels which cover the body in the vicinity of the operation area are taken direct from the sterilizer.

The instruments are sterilized by boiling and kept in trays with 1 : 20 carbolic solution, and before using this solution is diluted by boiled water.

The only sponges the author uses, made of Gamgee tissue, are allowed to soak for twenty-four hours in 1 : 20 carbolic solution.

The author takes as a test of this technique the operation for appendicitis, which he has performed 150 times with but one death.

The character of the dressing used after the operation is of little or no moment. The wound is dried and well dusted with iodoform.

The iodoform is retained in place by a pad of wool and a binder.

The fact that iodoform is swarming with microbes may disturb the bacterially-minded surgeon, but it disturbs neither the wound nor the patient.

Peritonitis and the Treatment of Peritonitis.—The evidence is practically complete which demonstrates that all forms of peritonitis are septic and due to infecting micro-organisms. The peritonitis ascribed to the pneumococcus has not yet emerged from the confusion of a bacteriologic squabble. Idiopathic peritonitis, which was at one time regarded as a definite and common disorder, has now, indeed, ceased to exist.

The constitutional symptoms of peritonitis are, in the main, those of septicemia, and it is from blood poisoning and not from inflammatory disturbances that the subject of peritonitis dies. When peritonitis is developed away from what is termed the small intestine area, it is apt to be localized. The surgical treatment of this form has been most successful. On the other hand, peritonitis in the small intestine area is rapidly diffused, and is as rapidly attended with septicemic symptoms. In this form the operative results have not been so brilliant, and it is evident that the treatment of this terrible complication must still incline towards that desirable prevention which is better than cure.

Excellent have been the results obtained in tuberculous peritonitis of almost all grades. The examination of some 300 recorded cases, treated by abdominal section, shows that a prospect of cure may be expected in over 60 per cent. of the instances.

The highest percentage of cures has been attained when the abdomen has been neither flushed out nor drained, but when the exudation has been merely evacuated and the parietal wound closed. With regard to the general management of the peritoneum in operative cases great care should be taken to avoid injuring the membrane, and it is much better to allow a few ounces of a harmless effusion to remain than to remove it by reckless flushing and sponging.

Perityphlitis.—The author denies the existence of the so-called appendicular colic. It is assumed by those who have been captivated by this term that fecal particles or foreign substances enter the appendix and cause intense muscular contraction of the organ. In opposition to this assumption it may be pointed out in the first place that fecal particles are remarkably well tolerated in the appendix. In the next place the intensity of the colic must depend upon the power of the irri-

tated muscle, and the supply of sensory nerves to the disturbed part. It so happens that the muscular structure of the appendix is of the feeblest character. Moreover, the actual nerve-supply of the organ is relatively poor.

It is needless to say that the great majority of examples of perityphlitis depend upon trouble in the appendix; but the author is convinced that now and then the peritonitis is started by mischief in the cecum itself, the appendix being sound.

In spite of all argument the etiology of perityphlitis is very simple. A catarrh leading to ulceration would appear to be the commonest factor, and it is this condition which precedes the stricture of the appendix. The author assumes that the origin of the appendix calculus is exactly identical with that of the rhinolith.

Foreign bodies, seeds, and fruit-stones play practically no part in the etiology of perityphlitis.

As regards the question of the surgical treatment, Treves says, it is seldom necessary to operate before the fifth day. He condemns the practice of immediate operation, as there is no sound basis for this procedure in either the pathology or the clinical prospects of the affection. It is true that some intense attacks end in death in forty-eight hours; these terrible phases of the malady are exceedingly rare on the one hand, and are not difficult to recognize on the other.

When an abscess is evident or suspected, the locality of the incision must be determined by the area of dulness and of the resistance. The incision should be free; the abscess cavity is gently examined as to its position and extent. The diverticula can be cautiously opened up with the finger. No elaborate search should be made for the appendix. Such search means risk to the frail abscess wall. Should the diseased appendix actually present itself, it can be ligated and taken away.

The high mortality accredited to this operation depends upon the blind resolve to excise the appendix at all hazards. The operation is concerned with the evacuation of an abscess, and those cases do best in which the least is done. As for drainage nothing acts better than iodoform gauze.

The treatment of the diseased appendix involves no new surgical principles and calls for no labored invention. The treatment of the abscess is based upon those great general principles which underlie the treatment of all abscesses, and the removal of the little organ demands no departure from the accepted procedures which belong to the common lore of surgery.

Murphy's Button.

Czerny (*Centralblatt für Chirurgie*, No. 31, 1896), in an abstract of a paper read before the German Surgical Society, states that he was induced to use the buttons by the results of recent experiments made by Marwedel on animals. These researches prove that the button effects a very even union of the intestinal walls without pseudo-membranous adhesions, and that the opening shows no tendency to subsequent contraction. Of thirteen cases in which the author has used the button, three were fatal. In one of these fatal cases death was the result of pressure gangrene and perforation, in consequence of the application of too large a button. In the other two cases the button was used under the most unfavorable conditions of enterectomy for extensive gangrene of strangulated hernia.

The button, Czerny found, was usually discharged in the stools, in the course of the second or third week.

In a case of successful gastro-enterostomy, the button had not been passed up to the date of the patient's discharge, twenty-four days after the operation.

It is pointed out that the use of the Murphy button, like that of every other method of intestinal approximation, requires practice, although its mode of application can be more readily learned than that of a good double suture, which, in Czerny's opinion, is still the best method of closing wounds in the intestines.

The chief objection to Murphy's method is the sojourn of a heavy metallic substance in the intestinal canal; until this has been discharged naturally by the bowel the surgeon must remain anxious as to the welfare of his patient.

It is concluded that Murphy's button, though not the final solution of the problem of intestinal suture, marks an important advance in this direction, and, therefore, demands careful study.

The Treatment of Tuberculous Glands of the Neck.

Stiles (*British Medical Journal*, September 12, 1896) says tuberculous disease of the cervical lymphatics gives rise to such very different morbid conditions, and presents itself clinically in such diverse forms, that no one line of treatment can be expected to suffice. Each case must be considered and treated on its own merits. Although in tuberculous adenitis it is the particular morbid condition which exists which mainly determines the treatment, there are, nevertheless, a number of secondary factors to be taken into account, and the value of each correctly estimated, before judgment be pronounced as to the particular line of treatment or operation to be adopted. For instance, the extent of the disease, its duration and progress, the previous treatment and its results, have all to be taken into account. Another important point is whether the glandular affection is a part of a general tuberculosis or purely a local condition. If the latter, the primary source of the infection must be sought for, and removed whenever possible.

That the disease should be so often localized to the glands of the neck is not surprising, when we remember the frequency with which the surface lesions exist in children in connection with the mouth, naso-pharynx, tympanum, conjunctivæ, and the skin of the head generally.

It is more than probable that the prevalence of tuberculous glands in the neck is intimately associated with the special development of adenoid tissue at this period of life, and with the frequency with which inflammatory processes are met in connection with the faucial and pharyngeal tonsils, and with the decay of the milk teeth.

Formerly the teeth were regarded as the most frequent and important source of infection. Within the last few years the tonsils, which Virchow taught were peculiarly exempt from tubercle, have been shown to be a frequent seat of it, and along with the naso-pharyngeal and lingual adenoid tissue, they are now regarded as a more important source of infection even than the teeth.

While admitting the primary importance of the naso-pharynx as a source from which the deep cervical glands become infected, the author is inclined to attribute considerable blame to the teeth as a source of infection of the submaxillary glands. Starck examined 113 children (aged from 3 to 12 years) with tuberculous cervical adenitis, and came to the conclusion that in 41 per cent. no source of infection could be discovered other than carious teeth, which were present in 80 per cent. of the cases.

As to treatment he adopts the following plan when the glands have broken down:

(1) Incision.

(2) Curetting.

(3) Application of pure carbolic acid.

(4) Packing with iodoformized wool.

The author claims for the wool that it is soft, elastic, acts as a good drain, and can be easily made to fill the entire cavity.

If the glands have not broken down and are very extensive he does not recommend excision, but opens and treats each abscess as the glands break down.

The Abortive Treatment of Acute Suppurative Adenitis of the Groin by Pressure Bandage.

Gaether (*Johns Hopkins Bulletin*, July, 1896) says that when used for the abortive treatment, applications of iodine, mercurial ointment, etc., have given practically no results, while injections of bichloride and carbolic acid are painful and liable to be followed by a great deal of inflammation.

The author's method is as follows:

If suppuration is not so far advanced as to bring the case practically to the operative stage, a piece of cotton as large as the fist is folded on itself again and again, until it has the shape of the bubo, and when placed on it does not completely cover it. This is carefully adjusted and a wad of tightly-compressed cotton as large as a cocoanut is placed over it. Small pieces of cotton are used in the inner and outer surfaces of the thigh to prevent chafing. A very tight spica-bandage is then put on.

The amount of pain experienced by the patients varied greatly. In some cases scarcely any increase in the pain could be noticed. In fact, the relief of pain has been, in most cases, remarkable.

Eighteen cases have been treated by this method, four of which were practically in the operative stage when the bandage was applied.

In two cases the patients could not permit the bandage to remain on more than two hours at a time on account of the intense pain.

Of the remaining twelve cases the bubo was aborted in nine, including two which seemed so far advanced as to preclude the idea of success.

The earlier the bandage was applied the better the termination, and if treatment was begun before any sign of suppuration could be made out, a satisfactory result was obtained in more than 85 per cent. of the cases.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Treatment of Enteric Fever by Cold Bathing.

W. Gilman Thompson (*American Medico-Surgical Bulletin*, October 31, 1896) read a paper with the above title at the meeting of the New York Academy of Medicine, held on October 20, 1896. He advises the administration of whiskey twenty or thirty minutes before the bath to prevent the shivering which is the

patient's chief complaint. Regarding the mortality rate, the speaker said that great caution must be exercised in drawing any conclusions from a few hundred cases of typhoid fever treated by any special method. Osler had recently reported on the cases of typhoid fever treated by the Brandt method at the Johns Hopkins Hospital, and stated that the lowest mortality there had been 7.1 per cent. Wilson had published a series of 524 cases treated in the German Hospital of Philadelphia, up to January 1, 1896, in which the death-rate was 7.25 per cent. A series of sixty-three cases, recently treated at the Presbyterian Hospital of New York by tub-baths, yielded a mortality of 7.75 per cent.

Objection had been made that the cold bath would cause the blood to be driven inward to the viscera, rendering hemorrhages more likely to occur, but facts did not support this theoretical objection. He thought it was quite safe to resume the baths after an attack of intestinal hemorrhage as soon as the patient had had one normal stool. He had never seen any harm from this method of treatment being continued in women during menstruation. His conclusions were as follows: (1) Cold tub-bathing does not ordinarily shorten the duration of enteric fever; (2) it does not prevent the occurrence of relapses; (3) it does not prevent the occurrence of many of the ordinary complications, most of which, however, are less severe than under other methods; (4) it does not preclude the simultaneous use of any other recognized method of treatment; (5) it may be safely employed in all cases except those actually having at the time severe intestinal hemorrhage or pneumonia, not even early pregnancy or menstruation being a contraindication; (6) it is a rational method because of its action in stimulating the nervous system, and because it regulates the metabolic processes of the body and increases the vital resistance; and (7) when begun in the first week there is almost a certain prospect of the disease running a much milder course, and in severe cases the mortality is reduced approximately one-half.

Dr. Morris Manges spoke of the antitoxin treatment of typhoid fever. He stated that an antitoxin serum had been obtained from guinea-pigs, and that this had been found harmless when used on the human subject. He stated that Dr. Lambert, of New York, had treated twenty-three cases in this manner. Of these, fifteen were more or less improved; in eight there was no result whatever, probably because they came under treatment too late, and one died. Henshaw had treated thirteen cases, of which eight were satisfactory, four unimproved, and one died.

Dr. Francis Delafield stated that in his mind there was no question that the tubbing method of treating typhoid fever was the best one known at present. He had tried the Woodbridge treatment recently in thirty cases. This consisted in giving small doses of calomel, podophyllin, eucalyptol, and carbonate of creosote. After this had been kept up for two or three days, the calomel and podophyllin were alternated with the guaiacol. Finding many sore mouths from the calomel, he soon substituted Epsom salt, but kept up the five-grain doses of guaiacol. Of the thirty cases so treated, four died. Of these fatal cases, one had been under treatment only eight days, and died without complications; the second and third cases were under treatment eleven days, and the fourth for thirty-eight days. This last had multiple abscesses of the liver. He thought that in mild cases the disease was somewhat shortened by the treatment, but that in severe cases the treatment accomplished nothing.

Orphol as an Intestinal Antiseptic.

Chaumier (*Therapeutische Wochenschrift*, 1895, 48) believes that in orphol we have an intestinal antiseptic which has all the advantages of beta-naphthol without

its drawbacks. It is easily administered and does not cause the burning sensation which follows the use of beta-naphthol. For children and infants the dose is from fifteen to seventy-five grains a day, given in milk or honey. For adults the dose is 75 to 150 grains a day. It is especially useful in summer diarrhea, in which affection the stools speedily lose their fetid odor, green color, and watery nature. Good effects have been obtained from its use in the diarrhea of typhoid fever and tuberculosis.

The Surgical Treatment of Graves's Disease.

Tricomi (*Il Policlinico*, No. 3, 1896) reports three cases of Graves's disease in which marked improvement followed partial resection of the lateral lobes of thyroid gland. The cases had lasted eleven, sixteen, and twenty months respectively. In each case the pulse-rate fell in a few days. The exophthalmos also disappeared; in one case in two weeks, in another in two months, and in the third after six months.

Paubotano.

Gabriel Pouchet has found (*Bulletin générale de Therapeutiques*, August, 1896) in paubotano, a Mexican drug belonging to the botanical genus of cassandra, which has been used as a substitute for quinine in malaria, an appreciable quantity of saponine, a small amount of an undetermined alkaloid, and two resinous substances, one of which was colorless and physiologically inert. The resinate alkali (the active resin combined with an alkali) was found to possess sufficiently irritant properties to cause a local abscess when a solution of twenty centigrammes in one cubic centimetre of water was injected subcutaneously into a guinea-pig. Fifty centigrammes dissolved in five cubic centimetres of water and injected into the peritoneal cavity of a guinea-pig proved fatal in four hours. The symptoms preceding death were a fall of temperature amounting to 7.6° C., abolition of the reflexes, and slowing of the heart and respiration after the animal had passed through a stage of dyspnea. At the autopsy were found a general congestion, but particularly marked in the intestines, and an extravasation of blood into the peritoneum, the heart and lungs being asphyxiated. In the frog the toxic dose was seven to ten centigrammes. With doses of twenty-five milligrammes the rate of the heart-beats was somewhat lowered, and a tendency to irregularity was manifested. With five centigrammes the pulse immediately became full and slow; later a period of transitory arhythmia occurred, the heart acting more and more slowly, to be arrested, in fatal cases, in systole. In dogs the arterial pressure was slightly increased by small doses, but considerable amounts (five centigrammes per kilogramme of body weight) caused a progressive diminution of blood-pressure, death occurring in the midst of intense paroxysms of dyspnea of the Cheyne-Stokes type. The post-mortem changes were the same as those described above. The alkaloid was found to possess very similar physiological properties as the resin.—(Translated by Dr. H. C. Wood, Jr.)

Sanoform.

Schlesinger (*Therapeutische Monatshefte*, September, 1896) recounts the advantages of sanoform, the latest substitute for iodoform. Sanoform is obtained by the action of iodine on gaultheria oil, and is the methyl ether of di-iodo-salicylic acid. It is a white, odorless, and tasteless powder, and can be heated up to 200° C. without decomposing. It is soluble in 200 parts of cold or ten parts of hot alcohol,

and readily in ether, chloroform, benzole, and carbon disulphide, but very insoluble in water or glycerin. It forms with caustic alkalies salts which are sparingly soluble in water. It contains 62.7 per cent. of iodine. The results of its use in surgery and gynecology are extraordinarily good; healing ensues more quickly and more certainly than with iodoform, signs of irritation are absent, and the drug is both odorless and non-poisonous. Arnheim has published seventy-two cases, including twenty-two of soft sore, twenty of hard sore, six of bubo, sixteen of phimosis, and three of surgical wounds, and finds that sanoform powder renders a secreting ulcer practically dry in two days, the secretion being soaked up by the powder, and forming with it an antiseptic covering beneath which suppuration speedily ceases. It does not appear that the iodine in sanoform is set free by cell activity; on the contrary, it seems to be extremely closely combined. Fifteen grains were injected under the skin of an animal in fine emulsion, but no potassium iodide could be detected in the urine, in which the presence of iodine could only be proved after evaporation and incineration. The drug is very slowly absorbed; it first appears in the urine about twenty-four hours after injection, and does not entirely disappear for about fourteen days, the maximum excretion being from the third to the sixth day. Sanoform can be used as powder, as a 10-per-cent. ointment, or in a 1-per-cent. solution in collodion. Schlesinger particularly recommends sanoform gauze (10 per cent.), which, owing to the high temperature at which the drug decomposes, can be easily sterilized,—a great advantage over iodoform gauze. A further point in its favor is that it contains no coloring matter and stains neither the tissues nor the bandage.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

Embolism of the Pulmonary Artery in the Puerperium.

Paul von Tiesenhausen (*St. Petersburger medicinische Wochenschrift*, October 5, 1896) has reported three fatal cases of pulmonary embolism in the puerperium occurring in the St. Petersburg Maternity. These were the only instances met with during twenty-five years, out of 50,000 puerperæ. Two of these occurred in 1884 and one in 1895. In all three cases the symptoms appeared when the patient first got out of bed after labor. In one case this was on the fourth day, in another on the sixth, and in the third on the seventh day. Death followed in two cases within twenty-five minutes, and in the third in ten minutes. A necropsy was performed in each case and the diagnosis confirmed. Von Tiesenhausen regards whiteness of the lips followed later by a cyanotic color as a very characteristic symptom. Prophylaxis consists in prolonged rest after confinement, and in cases of phlegmasia alba dolens rubbing of the leg should be forbidden. In the most recent case, hypodermic injections of ether and other means of treatment were tried without success.

Pyosalpinx Bursting in Pregnancy.

Fabricius (*Wiener medicinische Presse*, No. 43, 1896) refers to a patient, five months pregnant, who came under his observation after developing symptoms of acute peritonitis. He operated and, after opening the peritoneum, the right tube was found to be dilated and ruptured, much pus having escaped into the peritoneal cavity. Drainage was established, but being unsatisfactory the patient became worse. Fabricius then induced artificial abortion by means of a bougie. Drainage then became easy and the patient soon recovered. A fistulous tract, however, remained.

Uremia in Pregnancy without Eclampsia.

Sevitsky (*Annales de Gynécologie et d'Obstétrique*, August, 1896) describes a case in which he noted symptoms of uremia in a primipara one month before delivery. On the second day after labor the patient became semicomatose and perfectly blind. The urine was found to contain casts and was highly albuminous. Notwithstanding this no convulsions occurred, and the patient made a rapid recovery. From this Sevitsky concludes that uremia alone does not cause puerperal convulsions.

Delivery in the Moribund.

Decio (*Annali di Ostetrica et Gynecologica*, June, 1896) publishes a table of eighteen labors where women apparently in a dying condition were delivered *per vias naturales:* of these, six children, including one of a pair of twins, seem to have lived. Five were born dead. The remainder expired soon after delivery. Turning after various methods was exclusively the means employed in all of the cases. In six the mothers were suffering from eclampsia, of these five recovered, including the twin labor case. Three had cerebral apoplexy, of these two recovered. Two with advanced phthisis survived for a few weeks. Four were flooding from placenta previa, of these three were saved. One with pulmonary congestion recovered. One bleeding from an internal wound was saved, and one, injured by a fall, died.

Decio has also collected nineteen cases of Cesarean section performed upon dying women. All were graver cases than those in the table and all died. In thirteen cases the child was alive, one labor was of twins, making fourteen children saved. In only two was the os more or less open.

Retention of the Dead Ovum in the Uterus.

Graefe (*Festschrift Ruge's, Münchener medicinische Wochenschrift*, November 4, 1896) states that he has not yet been able to arrive at any certain information as to the etiology of these cases from microscopical examination, although he has personally observed eleven cases and collected fifty-nine reported ones.

Retrograde metamorphosis in the ovum is evident after prolonged retention. The mucous tissue becomes converted into more or less rigid connective tissue, but may even be preserved in places or show patches of growth after months of retention. The more the fruit may be developed at the time of its death, the greater the danger for the mother. The uterus should be emptied as soon as the diagnosis has been established. If before five months, this may be done by dilatation under ether and clearing the uterine cavity with the finger. Later than five months premature labor should be induced.

Pregnancy in the Cervix Uteri.

Trotta (*Gazette hebdomadaire de Médecine et de Chirurgie*, No. 23, 1896) reports a case in which the uterus was removed for myoma a month after the patient had aborted. The uterine cavity was found to be divided into two parts. The upper part, corresponding to the body, was lined with normal endometrium; the lower, which was found to be the cervix, bore a thick mucosa, which contained decidual cells and amniotic relics.

Ovariotomy Per Rectum during Labor: Death.

Sevitsky (*Annales de Gynécologie et d'Obstétrique*, August, 1896) records a case of labor at term where the fetal head was arrested by a dermoid tumor of the right ovary. The head was brought to the outlet by means of forceps, while the tumor, bulging through the anus burst the rectal wall. Its contents were emptied and the fetus was then easily extracted but was dead. Finally the cyst was drawn down and amputated, the rectal wall being carefully sewn up. There was bad flooding during the third stage of labor, and the patient died in thirty-three hours of pelvic peritonitis.

Meconium and Sepsis.

Remy (*Revue Médicale de l'Est*, March 15, 1896) impresses the fact that the membranes should never be ruptured before complete dilatation of the os without very special reasons. When the waters escape and meconium is mixed with the liquor amnii, the uterine cavity is soiled. If labor be prolonged and antiseptic precautions impracticable the fluid mixture decomposes rapidly and septic infection becomes certain. Remy distinguished the above conditions in seven labors under his observation. The mortality was 42 per cent. Antiseptic precautions are, therefore, especially needed in cases of premature rupture of the membranes.

GYNECOLOGY.

UNDER THE CHARGE OF

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ASSISTED BY

H. D. BEYEA, M.D.

Regarding Metritis and Endometritis.

Döderlein (*Centralblatt für Gynäkologie*, No. 45, 1896), in a paper read before the Obstetrical Society of Leipzig, on January 20, 1896, says, that the hitherto general belief that inflammations of the uterus are divided into metritis and endometritis can no longer be considered correct, since it has been shown that the uterus is always diseased *in toto*. The causes of metro-endometritis are very numerous. Up to the present time they can only be separated into two chief groups: such uterine inflammations as are caused by the introduction of

micro-organisms, therefore infectious, and those in which there is no bacterial influence.

To the first group belong the septic and saprophytic, gonorrheal, tubercular, syphilitic, and diphtheritic endometritis. That there is an endometritis which results from fungi or amebæ, the writer believes is not proved.

The second group can have its origin in diseases of the tubes and ovaries the tumorous growths (fibroid and carcinoma), nervous irritation, circulatory disturbances, in anomalies of development of the ovum, or puerperal subinvolution. From the microscopical anatomical characteristics of the various forms of endometritis nothing definite can be gained regarding their separate causes. It is, however, probably proved that the interstitial endometritis is caused only by infection, and the glandular and hyperplastic through various other uterine inflammations. The further consideration of this disease by the writer is to be found in Veit's "Handbuch der Gynäkologie."

The Treatment of Intestino-Vaginal Fistula.

Chaput (*Gazette hebdomadaire de Médecine et de Chirurgie*, No. 41, 1896), in a case of intestino-vaginal fistula in which the knife and thermo-cautery had many times failed, applied nitric acid to the edges of the vaginal aspect. The thus cauterized surfaces adhered and the fistula closed.

Angio-Dystrophia Ovarii.

Bulius (*Centralblatt für Gynäkologie*, No. 44, 1896). The writer's investigations refer to a chronic diseased condition of the ovaries, in which there is no very distinct enlargement; the pathological anatomy shows nothing of importance; there are definite functional disturbances and other phenomena. The characteristics of these changes are—

(1) Macroscopically, enlargement of the ovaries, particularly in their greatest diameter, the formation of deep furrows on the surface, remarkable density of the entire organ, and the formation of cysts.

(2) Extensive disease and increase in the number of blood-vessels. The arteries and capillaries are separated in the medulla and cortex. The disease is an extensive thickening and hyaline degeneration of the walls with obstruction of the lumen.

(3) Marked reduction in the primary (developing) follicles, the developing to the completely developed follicles are seen, small cystic degeneration of the Graafian follicles, decisive pathological occurrences in the retrograde metamorphosis of the misplaced, augmented, and destroyed follicles.

The clinical symptoms, which are dependent upon the amount of anatomical changes, are very profuse menstrual hemorrhage, lasting sometimes three weeks. Pain in abdomen and back, occurring paroxysmally, the paroxysm often being so long that the patient is free from pain only a few days. Also severe nervous symptoms.

Endometritis is constantly associated. Comparatively little change in the remaining genital organs. He believes the changes in the ovaries must be regarded as primary. As to the cause of the disease nothing definite up to the present time has been determined. The results after oöphorectomy in four cases were good, in three others the hemorrhage ceased and the pain disappeared.

Herff, in the discussion of this paper, stated that he doubted the belief that the disease is primary in the ovaries. From the fact that patients had not been improved through oöphorectomy seemed to prove this, that it is a neurosis.

Bulius replied that in only one of his cases could the disease possibly be considered a neurosis, and therefore it must be primary in the ovary.

An Instance where Unilateral Oöphorectomy was performed for Stomachic Neurosis.

Braun (*Centralblatt für Gynäkologie*, No. 46, 1896), at the meeting, on April 21, of the Vienna Obstetrical and Gynecological Society, reports a case where, because of a high-grade stomachic neurosis, the right ovary was removed with at least temporary cure. The patient was 26 years of age and complained of a sensation of lassitude, pain in the stomach and abdomen, which increased in severity and confined her to bed for twenty weeks. Menstruation had always been irregular. In her twentieth year she became pregnant, had severe vomiting, became very weak, and in the eighth month labor was induced. After this she was six weeks in bed. In her twenty-second year she began to complain of lassitude and depression, slept much and often during the day, between meals she would vomit often twelve times in the twenty-four hours. She also then complained of abdominal pain, particularly in the right ovarian region. For two years she had been treated in the clinic of Schröffer with baths and for some time was nourished by bowel. This treatment did not improve her health. When she came under the writer's observation the pain in the right side was absent; she vomited every day between meals; the uterus was found somewhat retroverted, the right ovary enlarged and painful. It was thought that this enlarged, degenerated, and painful ovary might be the cause of the stomachic symptoms, and accordingly it was removed *per vaginam*. During the three weeks which had elapsed since the operation all symptoms had disappeared.

Schauta, in the discussion of this case, stated that there must have been a relation between the neurosis and diseased ovary, and there is no doubt but that a degenerated ovary can have an influence upon the function of the stomach.

Regarding the Use of Undrained Silk-Suture Material.

Schäffer (*Centralblatt für Gynäkologie*, No. 46, 1896) writes that silk as a suture material has greatly replaced the smooth, hard silkworm gut and silver wire because of its flexibility, elasticity, and strength. The reason why silkworm gut and silver wire are still frequently employed is that where silk is employed stitch-hole abscesses are apt to result. The great trouble which every one has experienced in the sterilization of the silk suture, chemical as well as physical disinfection, has continually become less and less; also the physical quality of the silk itself is now considered,—the construction of the Ihle silk-suture-carrier, which has the object of exposing each strand directly to the sterilization. As experimentation has shown, these methods are sure enough in rendering the bacteria in suture material unharmful, except as regards catgut, which sometimes contains an irritating toxin which will develop in water, but not in the preparing alcohol or ether. He says that in order to prevent the invasion of the stitch canal with bacteria two conditions must be considered: (1) the site of introduction of the suture must be free from bacteria, and (2) the suture material should not absorb fluids, so that the stitch canal remains dry; no bacteria are then introduced as, at least, a favorable culture medium is not prepared. This, however, is usually not attained, for during the manipulation of the wound and skin the suture material is saturated with fluid. The first condition

is prevented, or, at least, greatly prevented through thorough mechanical (the brush, soap, water, and alcohol) and chemical (bichloride of mercury) disinfection. The mechanical disinfection not only removes a large amount of fat, but also partially empties the glands of the skin. The second condition as regards the silk suture is not gained; for, although sterile, it is very hydroscopic. If the silk suture is introduced in the abdominal wall in the ordinary manner, particularly in fat women, it is very easily removed, and Ihle believes this is true of the figure-of-eight ligatures in the abdominal cavity. The silk ligature absorbs the wound matter and continues saturated, and such saturated suture at the body temperature constitutes the most favorable culture medium for pus-organisms which may have been introduced from the skin surface or its glands. Considering this factor as important, the writer sought to get a silk suture which would act as a capillary drain, and therefore now advises the use of silk suture material which is impregnated with gutta-percha, prepared by Evens and Piston, of Kassel. Its advantages are that it is as soft, elastic, strong, and as easily sterilized as before; it receives a satin lustre, a proof that it has the consistency of vessels; if dry ordinary and impregnated portions be placed in water, the impregnated is unchanged while the other becomes soft and saturated; and if the end of each be placed in colored water at the body temperature, the impregnated remains dry and the surface only is slightly discolored.

PATHOLOGY.

UNDER THE CHARGE OF

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Leydenia Gemmipara Schaudinn, a New Rhizopod found in Ascitic Fluid.

Von Leyden and Schaudinn (*Transactions of the Royal Prussian Academy of Science*, July 30, 1896; referred to in *Centralblatt für innere Medicin*, November 14, 1896) found in the ascitic fluid of a patient suffering from ascites, edema, aortic insufficiency, and multiple abdominal tumors (detected after abdominal puncture) a large number of round cellular elements, filled with fat-like drops and yellowish pigment granules, and occurring in nest-like groups. In a number of cells the formation of pseudopods was observed. In a second case, one of cancer of the stomach, these same cells with the formation of bristles or beard-like projections from the periphery, could be noted. Some of the cells seemed to present a formation suggesting budding. Schaudinn, a competent zoologist, pronounced the bodies a species of rhizopods, and gave them the name of Leydenia gemmipara, the latter term expressive of the mode of reproduction by budding.

A connection between the amebæ and the carcinoma is considered possible, and it is striking that the small buds projecting from some of the amebæ bore a close resemblance to the parasitic enclosures in cancer-cells described by Sawtschenko.

Concerning the Augmentation of the Natural Resistance by the Production of Hyperleucocytosis.

Hahn (*Berliner klinische Wochenschrift*, September 28, 1896) refers to the fact that Buchner more than two years ago discovered that pleural exudates rich in leucocytes, obtained by the injection of sterilized aleuronat-emulsion into the pleural cavity of animals, were more bactericidal than the blood or blood serum of the same animals. This greater power was proved to depend on the leucocytes or on some secretory product furnished by them. The thought then suggested itself that it might be possible by increasing the number of leucocytes in the blood to augment the natural resistance of the individual. Two courses lay open for the accomplishment of this purpose: either the quantity of bactericidal substances could be increased by the introduction of fluids rich in leucocytes obtained from other animals, or a hyperleucocytosis could be produced by artificial means.

The first course seemed unproductive since Buchner had shown that the alexins of different animal species are mutually destructive. The second gave better results. Hyperleucocytosis was secured by the injection of nuclein or nucleinic acid. When dogs were used it was found that the blood obtained during the stage of hyperleucocytosis was decidedly more bactericidal than the normal blood of the same animal. But, as the author at this point admits, the favorable effect of hyperleucocytosis can not be expected in cases in which the bacteria are localized and do injury by their poisons, but only in those in which they are actually circulating in the blood.

For the purpose of studying the effects of hyperleucocytosis in man, the blood of a patient receiving tuberculin-injections was employed. It was found that leucocytosis followed the injections, but only when the number of white cells reached 13,000 or 14,000 was any increase in bactericidal power observed. This indicates, however, that the bactericidal properties of human blood depend in the main on the number of leucocytes. Yet it is not likely, as already indicated, that hyperleucocytosis will exert a favorable influence on all bacterial infections. We know, for example, that in diphtheria progressive increase in the leucocytes is not a favorable symptom. This will probably be found true of all infections in which the bacteria remain localized and act by virtue of poisons which they elaborate. In such cases the point is not so much the destruction of the bacteria as the neutralization of their toxins, and the antitoxin treatment will be of chief use.

The Specificity of the Erysipelas Streptococcus.

Petruschky (*Zeitschrift für Hygiene*, xxiii, Heft 1) discusses this question and comes to the conclusion, which, of course, is not new, and has been accepted by most recent writers, that there is no specific erysipelas streptococcus. The particular morbid condition produced by streptococcus-infection depends on—

(1) *The seat of infection.* Dermal erysipelas, *e.g.*, arises only when the infection is in the lymph-spaces of the skin or mucous membranes.

(2) *The virulence of streptococcus for man.* This is by no means equal to the virulence of the same streptococcus for mice or rabbits.

(3) *The individual resistance* of the infected person.

(4) *The influence of existing diseases* which modify the resistance of the individual. In tuberculosis, diphtheria, scarlet-fever, small-pox, typhoid fever, and influenza the resistance is lessened; in carcinoma and sarcoma it is not lessened, but perhaps increased.

Albuminous or Serous Expectoration.

West (*Clinical Society Transactions*, xxix, 1896, p. 169) reports the occurrence of albuminous or serous expectoration following paracentesis thoracis. After forty ounces of fluid had been withdrawn with a siphon, the patient began to cough; expectoration commenced in ten minutes, and in three hours the patient brought up a pint of frothy fluid. The fluid divided into three layers on standing, was rich in mucin and poor in albumin. Its production is ascribed to edema of the lungs.

The Relation of the Specific Gravity and the Amount of Albumin in Pathologic Fluids.

Ott (*Zeitschrift für Heilkunde*, xvii, Heft 4, p. 283) has estimated the amount of albumin in pathologic fluids (by means of Kjeldahl's method, and multiplying the per cent. of N by the factor 6.25) for the purpose of determining (1) the amount of albumin in the various diseases; (2) the relation of these amounts to the specific gravity.

In the first table, containing twenty-five examinations, eleven appertain to the fluid in cancer of the peritoneum,—the albumin was about 4 per cent. on an average. The amounts differed in the same case at different punctures. In peritoneal tuberculosis it was 6.558 per cent.; in hepatic cirrhosis from 2.006 to 6.887 per cent.; in echinococcus cyst of the liver 0.360 per cent.; in ovarian cysts from 1.818 to 5.435 per cent.; in pyopneumothorax from 8.281 to 8.928 per cent.; in hydrocele the amount was usually high, but varied greatly, from 0.737 to 7.851. The general conclusion from these figures is that there is no definite amount of albumin for any one disease.

A study of the specific gravity in the light of the albumin-content of the fluids shows further that the former—*i.e.*, the specific gravity—does not permit any conclusion as to the quantity of albumin in pathologic fluids, and that it is of no diagnostic value. For example, the fluid from a case of cancer of the peritoneum and that from an echincoccus cyst had the same specific gravity, 1009, yet the former contained 2.6 per cent. albumin and the latter only 0.360 per cent.

DERMATOLOGY.

UNDER THE CHARGE OF

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Pathology of Pelade (Alopecia Areata).

Sabouraud's researches on pelade (alopecia areata) are described by Brocq. This latter writer (*Journal of Cutaneous and Genito-Urinary Diseases*, September, 1896), one of the leading dermatologists of France, reviews the elaborate and lengthy work done by Sabouraud, who has devoted more than two years without cessation to a study of the subject, including histological, microbiological, experimental, clinical, and therapeutical observations. Three hundred patients affected

with this disease, sixteen biopsies, twenty-two pieces of skin taken from a subject who died of tuberculosis, and numerous experiments with cultures, constitute the foundation of the work.

Sabouraud starts out with the view that the disease is contagious,—the old French theory of Bazin, and more recently of Vidal, Brocq, Besnier, and others. He thinks that the implements of the hair-dresser are almost the only agents of transmission of contagion. It is thus explained, he thinks, why pelade seems at first glance to be a sporadic affection in cities, and why in colleges and barracks it may assume the form of an epidemic.

Sabouraud insists that in an area increasing in size the zone of clubbed hairs is larger and better formed when the extension has been rapid, whereas if the patch has grown slowly they are few and disseminated. The patch in the beginning is characterized by a clear space, at the border of which the hairs are already less numerous than on surrounding regions. In the centre of this "embryo patch" are (1) a few orifices, empty and dilated; (2) long clubbed hairs disposed in the form of a crown around these follicular orifices. A study of the diseased hair shows that various microbes are found in it, six being quite constantly present. These are (1) a white fungus, (2) a yellow fungus, (3) a bacillus subtiliformis, (4) a bacillus in the form of a boat staining with difficulty, (5) a special micrococcus which Sabouraud designates provisionally with the name "micrococcus entis communis, (6) the spores of Melassez (the flask-bacillus of Unna), which he calls the bacillus arciformis. The two microbes, which appear to be the most important, are found also in seborrhœic subjects who are not affected with pelade. None of these microbes can be regarded as causative factors of the disease.

When serial sections of the affected scalp are made in the beginning of the disease, lymphocytes and "mastzellen" are found, but they are not numerous. Besides, there are a multitude of young follicles showing deformities, consisting of folds, indentations, partial invaginations, in which no new hairs are formed even above the young papillæ. The chief lesion at this stage consists of the formation at the upper third of the follicles, between the sebaceous gland opening and the follicular opening orifice in the skin, of an ampulla-like dilatation about three-tenths of a millimetre wide by one-half of a millimetre in height, as a rule ovoidal in shape, with the long axis vertical. This Sabouraud calls the "peladic utricle." It contains compact collections of microbes, invariably pure cultures of a microbacillus which is always the same. It is ten times smaller than the short bacillus of diphtheria, and shorter and finer than Pfeiffer's influenza bacillus. Sabouraud regards it as the smallest known bacillus.

With practice the orifice of a hair-follicle containing an utricle can be distinguished by the naked eye, and it can sometimes be pressed out by mere pinching. The contents contain the bacillus very abundantly, but proof of the pathogenic nature of this microbe has not yet been established, and Sabouraud expresses doubts as to its real importance. He remarks that it resembles very closely the microbe of comedo, of acne, and of seborrhea (of Unna-Hodara).

[Sabouraud's conclusions are insufficient to explain the presence of the disease. It may be remarked that while clinical instances which seem to point to the contagious nature of this disease are not very rare in France, they are exceedingly rare in the United States. There are comparatively few dermatologists of large experience in the latter country who believe in the contagiousness of alopecia areata. The presence of a microbe in the disease does not in itself constitute proof of its contagious nature.]

Prurigo.

E. Besnier, in an elaborate paper (*Monatshefte für Praktische Dermatologie*, September 15, 1896), discusses this disease in its totality, but especially its position among other allied diseases of the skin, and concludes that it begins in early childhood as a cutaneous disturbance manifesting symptoms closely related to pruritus and to urticaria, from which diseases it is indistinguishable in the beginning; that it occurs in certain parts of the world in consequence of inexplicable national peculiarities of the skin or of heredity, taking on a chronic form characterized by certain well-defined clinical features.

Airol.

Hahn (*Aerzlichen Praktiker*, No. 13, 1896) recommends this new drug, which in its chemical constitution has much in common with dermatol, it being in fact a dermatol in which a hydroxyl group is replaced by iodine, and it is therefore a "bismuth-oxy-iodo-gallate." It was introduced by Lüdy and Hägler, of Basel. It is a fine, light, gray-green, ashy powder, insoluble in water, ether, alcohol, and chloroform; is unirritating, aseptic, and drying, and promotes the process of granulation. It is especially useful in ulcers of the leg, particularly those with free secretion, and in the moist dermatitis and eczema that often surrounds these ulcers. In recent excoriations, cutaneous and other wounds, and in panaritium, and the like, it is very useful, and satisfactorily takes the place of iodoform, over which it has the advantage of being odorless and of being comparatively cheap. No dermatitis or poisoning from its employment has as yet been noted.

Pigmentary Syphiloderm and its Diagnostic Value.

G. Lewin (*Charité-Annalen*, Berlin, xviii) regards this manifestation as of importance, but does not regard it as an absolutely certain diagnostic sign of syphilis, for he has observed it upon a large number of men who have never had syphilis. Since it may exist upon non-syphilitics, its presence is no indication for syphilitic treatment. Antisyphilitic remedies possess no influence over the disease. Syphilitic women who become pregnant do not show the leucoderma more pronouncedly than those who are not pregnant. The leucodermic manifestation may appear upon parts of the skin that before have been the seat of some syphiloderm, but it is not established that there exists any connection between the two affections. It is necessary, perhaps, to seek the cause of the leucoderma in a paralysis of certain centres which govern the movements of pigment,—paralyses which have been caused by a toxin of syphilis.

Peculiar Eruption from the Contact of Arterial Blood.

Sheild (*British Journal of Dermatology*, November, 1896) reports, in a brief note, a peculiar affection of the skin resulting from contact with arterial blood. He has observed it principally upon his own forearms and forehead after operations in which these were sprinkled with blood. Upon washing away the crusts of dried blood, a faint pink spot appears, which darkens to a faint red, lasts about a half hour, then slowly disappears. The author has seen it not only in his own person, but upon the forearms of his assistants, but in them it was less marked; and he has twice noted it upon the skin around an amputated breast. The rash is unattended by subjective symptoms.

Bald Ring-Worm.

Dubreuilh and Frèche (*British Journal of Dermatology*, November, 1896) call attention to a form of ring-worm, under this title, which resembles alopecia areata so closely as to be distinguished from it with difficulty. They report two cases, one certainly, the other probably of animal origin, due to the ectothrix variety of the trichophyton. The transformation from the ordinary form of ring-worm to that resembling alopecia areata was sudden. These cases, the authors think, give a positive foundation for the belief in a relationship between ring-worm and alopecia areata.

Local Treatment of Tubercular Leprosy.

Besnier (*Pictorial Atlas of Skin Diseases and Syphilitic Affections of Models in the St. Louis Hospital, Paris*) speaks in praise of the value of electro-galvanic cauterization for the reduction of leprous tubercular infiltrations wherever situated. The thermo-cautery may also be used, but its effects are more difficult to limit, cicatrization is slower, and the plastic results less satisfactory. After cauterization should follow daily spray with weak carbolic acid lotion, and dressing with sublimate or iodoform gauze. Two photographs show a very remarkable improvement in a leper, but the treatment is necessarily slow and tedious. [It seems to be pretty well established that lepra treated in another country from that in which the disease is endemic is more amenable to local and internal remedies; thus in France, Germany, and England the results have in some cases been remarkably good.]

Chronic Equinia of the Skin.

Buschke (*Archiv für Dermatologie und Syphilis*, Bd. xxxvi, Heft 3), as the result of his study of the literature of the subject and the examination of a case of his own, concludes as follows: There is a form of chronic equinia localized upon the extremities. The ulcers which result from the equinia new formation have nothing characteristic in their appearance; they are almost the same as syphilitic ulcers. The diagnosis is to be made by bacteriological examination and intraperitoneal inoculation according to the method of Straus; this should be supplemented by the identification of the bacilli obtained from the testicles by staining and culture. Mallein is possibly available for diagnostic purposes in human equinia. As to treatment, extirpation, where possible, or cauterization with the Paquelin, is indicated.

Treatment of Psoriasis by Mercurial Injections.

Brault (*Annales de Dermatologie et de Syphiligraphie*, No. 89, 1896), at the *séance* of July 9, 1896, of the Société Française de Dermatologie et de Syphiligraphie, made a second communication concerning the use of the yellow oxide of mercury hypodermically in the treatment of psoriasis. A year previously he had reported two typical cases treated by this method in which desquamation and disappearance of the eruption had occurred after the third injection, but had also expressed a doubt as to the permanence of the cure. In this second communication he reports the occurrence of relapses in these patients, one after five months, the other after one month. Experiments were also made with injections of calomel; these likewise caused the eruption to disappear, but did not prevent relapses.

BOOK NOTICES.

THE PRACTICE OF MEDICINE. By HORATIO C. WOOD, A.M., M.D., LL.D. (Yale), Professor of Theraputics and Clinical Professor of Nervous Diseases in the University of Pennsylvania, and REGINALD H. FITZ, A.M., M.D., Hersey Professor of the Theory and Practice of Physic in Harvard University. 8vo, pp. x, 1071. Philadelphia: J. B. Lippincott Company, 1897.

The authors state in the preface that the present work is the outcome of an attempt to view the practice of medicine simultaneously from the pathologic and therapeutic points of view. H. C. Wood has written all the therapeutics of the book, and the sections on nervous diseases, the articles on diseases of the muscles and on the various infectious diseases, except diphtheria, dysentery, tuberculosis, leprosy, and syphilis, and the chapter on acute and chronic poisoning. The rest of the book has been written by R. H. Fitz. At first sight one might think it impossible that two physicians, especially two physicians eminent in the profession, could agree sufficiently to unite in writing a work on practice. One would expect differences of opinion, glaring in proportion to the strong individuality of the writers. Yet in the present instance no such glaring differences, except possibly in the views as to the proper treatment of appendicitis, are to be found; on the contrary, we believe the conjoint authorship has resulted in the production of a work that answers the requirements as regards unity and proportion, and also one that is stronger in all departments than one man could be expected to write alone.

In the limit of an ordinary review one cannot give a detailed account of the book, but can only dip into it here and there. The article on typhoid fever is excellent, and full of helpful suggestions. We miss in diagnosis reference to Widal's method of examining the blood, or rather the effect of the blood upon pure cultures of the typhoid bacillus. The article on diphtheria is one of the best in the book. Antitoxin is recommended in its treatment, but with more discretion and less enthusiasm than some have shown. As the ordinary pharyngeal diphtheria, as seen in well-to-do families in private practice, almost invariably ends in recovery, we have never been able to see the propriety of injecting antitoxin as soon as a diagnosis can be made. It is quite otherwise with the laryngeal and with all grave forms.

The article on tuberculosis covers sixty-two pages, and is one of the most complete and satisfactory we have seen in any book. As regards treatment, Dr. Wood makes it clear that hygiene, diet, and climate are the essentials to cure. His advice as to climate has the great advantage of being precise. The testimony of Dr. Penrose as to the great value of New Mexico is very valuable.

In the article on the treatment of acute rhinitis we think the use of a mild alkaline spray should not have been omitted. Too frequently a partly-cured acute rhinitis lays the basis for chronic rhinitis and ultimate deafness. The suggestion to use cocaine in suppositories is unfortunate. Cocaine is more likely to prolong the rhinitis than to cure it, but the immediate results are so gratifying to the patient that there is great danger of encouraging the cocaine habit.

The articles on bronchitis and pneumonia are very satisfactory. Perhaps Dr. Wood appears at his best in the management of pneumonia and in his therapeutics of that disease.

Under diseases of the stomach there is no mention of auscultatory percussion, although ordinary percussion is fully given as one of the methods of determining the size and position of the stomach. Under the causes of acute entero-colitis in infants and young children it would have been better to give more prominence to the toxic powers of fermenting cow's milk.

There has for many years been great need of a book on practice of medicine written from the point of view of the physician at the bedside of his private patient. We quite agree with the apparent intimation in the preface of the present work that the pathologic side of clinical medicine is receiving undue attention. Post-mortem records and hospital experience build up the scientific physician; they teach the history of disease and diagnosis. We have most excellent books written from this point of view; but unfortunately they do not help the physician much in solving the complicated problem presented by the surroundings, the means, the temperament, and constitution of the patient *plus* the particular disease from which he may be suffering. Moreover, there has come to be too great a disposition to ignore therapeutics in the practice of medicine. In some instances we fear this because the writers have devoted so much time to the scientific side of medicine that they have not had the opportunity to observe the action of remedies by daily watching at the bedside of friends and patients, where alone therapeutics can be learned. For these reasons we welcome the practice of Wood and Fitz. It does not supply all the needs, by any means, and we could wish it were fuller of detail than it is; but it is in the right direction and will prove helpful and encouraging where other books exhibit a disheartening therapeutic nihilism.

Epidemic Ophthalmia: Its Symptoms, Diagnosis, and Management, with Papers upon Allied Subjects. By Sydney Stevenson, M.B., F.R.C.S. (Ed.), Surgeon to the Ophthalmic School, Hanwell, W. Edinburgh and London: Young J. Pentland. New York: Macmillan & Co. 8vo, pp. viii, 278.

That a book of this size should be devoted to but a single variety of diseases of one organ in the body would have, years ago, seemed *preposterous to most* medical men. With the advance, however, in bacteriological research, methods for the correction of bad sanitation in collective institutions, the vast increase in therapeutical measures

and operative technique, such a collection of data becomes of incalculable value not only to the ophthalmologist and the general practitioner, but to the public at large.

Prophylaxis, the medical study of all advanced students of the day; preventive medicine, that which seeks to rid us of the cause of disease; and empirical therapy, which has done so much to cull the good from the bad; have all been freely and sagaciously used by the author of the present monograph.

Well-executed drawings, an illustrated appendix, an excellent bibliography, and a well-arranged index, are not least among the good points of this good book.

We heartily endorse it and wish for both its author and publisher a large and profitable sale.

Ptomains, Leucomains, Toxins and Antitoxins; or the Chemical Factors in the Causation of Disease. By Victor C. Vaughan, Ph.D., M.D., Professor of Hygiene and Physiological Chemistry, and Frederick G. Novy, Sc.D., M.D., Junior Professor of Hygiene and Physiological Chemistry in the University of Michigan. New (third) edition, revised and enlarged. 12mo, pp. 603. Philadelphia: Lea Brothers & Co., 1896.

The amount of study which has been bestowed upon the chemistry of disease in recent years may be roughly estimated from the fact that the present, or third, edition contains about 260 more pages than the first edition, and yet we are confident that the authors have been as concise as the importance of the subject permits.

The number of diseases classified under intoxications is increasing, and the importance of the subject grows steadily. Physicians need reliable information on the chemical factors in the causation of disease, and they will find it in the volume under consideration. We cordially recommend it.

Anatomy, Descriptive and Surgical. By Henry Gray, F.R.S., Lecturer on Anatomy at St. George's Hospital, London. Philadelphia and New York: Lea Brothers & Co., 1896.

Gray's "Anatomy" is probably known wherever medicine is taught in the English language, and it is doubtful if any other work on this subject has been so universally used. The author will therefore need no introduction to our readers. The success of Gray's "Anatomy" is largely due to the fact that, in addition to a careful and accurate description of the entire subject, the practical application of the knowledge gained has not been neglected, and the "surgical anatomy" forms a distinctive feature of this work.

This new American edition has been thoroughly revised and brought up to date. This has necessitated the introduction of new material, new illustrations, and in some instances the recasting of the entire subject. The chapters that have been rewritten are those on

the brain, the teeth, and the abdominal viscera, exclusive of the genito-urinary tract; and the sections on histology and development have been remodelled.

The splendid illustrations, which have always been a feature in "Gray," have been rendered more natural and attractive by representing the arteries, veins, and nerves in distinctive colors.

It is not an exaggeration to say that this is the best single volume on anatomy in the English language. Beginning with a description of the blood, the various fluid and solid tissues of the body are described, after which the student is led through a chapter on "development;" then follow in succession the sections on the skeleton, the articulations, muscles, and fasciæ, the arteries, the veins, the lymphatics, the nervous system, the organs of sense, the organs of digestion, etc.

Thus a thorough knowledge of the subject is acquired without the necessity of consulting other books, a great desideratum to the student of medicine. As a work of reference for the surgeon or practitioner it has no superior.

The printing and binding are of the highest order.

A Manual of Anatomy. By Irving S. Haynes, Ph.B., M.D., Adjunct Professor and Demonstrator of Anatomy in the Medical Department of the New York University, etc. Philadelphia: W. B. Saunders, 1896.

In this manual Dr. Haynes has stated in a plain, terse manner the "facts of anatomy." We miss at the outset a description of the bones and joints, which in most text-books serves to introduce the subject. This omission was intentional, and the student will be obliged to obtain the information elsewhere. The work has been prepared so as to act as a guide in dissections. The various structures are described in the briefest possible manner in the order in which they are encountered. The study of muscles is simplified by considering them under the four headings: "origin," "insertion," "nerve supply," and "action." In special instances other details are added.

All of the illustrations are original, and with few exceptions are reproductions of photographs taken by the author. Most of them are excellent, and have the merit common to all good photographic work of being faithful representations of the subject. The illustrations of the brain are exceptionally good, and the excellent series shown are an admirable means of obtaining an accurate conception of this complex organ.

Careful attention has been given to a description of the viscera, especially with reference to their relations to the surface of the body. The index is very complete.

While this work will not replace the standard text-books, as a manual it will be found useful, particularly in getting at facts quickly, as all unnecessary matter has been omitted, the main object in view being to give the essentials in the least space.

Pictorial Atlas of Skin-Diseases and Syphilitic Affections, in Photo-Lithochromes from Models in the Museum of the Saint Louis Hospital, Paris; with explanatory woodcuts and text by E. Besnier, A. Fournier, Tenneson, Hallopeau, Du Castel, H. Fenlard, and L. Jacquet. Edited and annotated by J. J. Pringle. London: Rebman Publishing Company; and Philadelphia: W. B. Saunders, 1896. Part V.

Notice of the preceding parts of this valuable atlas has been made. The work serves to bring most satisfactorily some of the wonderfully exact models of this unrivalled museum of the diseases affecting the skin to the student of dermatology. The reproductions are for the most part excellent, and if any criticism were made as to the coloration it would be that the reddish tints are somewhat dull, but this is a fault that can be tolerated better than over-coloration. The plates represent conglomerate trichophytosis, or tinea kerion, a circumscribed carbuncular-looking plaque on the nape of the neck; chilblain-lupus (lupus pernio), affecting the face and back of hand and fingers; papulo-tuberculous syphiloderm of the face (in the form of raised, confluent annular lesions); and vacciniform infantile ecthyma of the thighs and buttocks. The plate of the syphiloderm is the most life-like and beautifully colored of all. The text is from the pens of masters in dermatology, and leaves nothing to be desired. We commend the atlas cordially as an accurate exponent of interesting and rare French cases.

In Sickness and in Health. A manual of domestic medicine and surgery, hygiene, dietetics, and nursing, dealing in a practical way with the problems relating to the maintenance of health, the prevention and treatment of disease, and the most effective aid in emergencies. Edited by J. West Roosevelt, M.D. 8vo, pp. xvi, 991. New York: D. Appleton & Co., 1896.

This book is a system of domestic medicine to which there are twelve contributors besides the editor. It differs from other books on the same subject chiefly in the ambitious attempt to cover the whole field of medicine.

Perhaps a lack of proportion is inevitable in a book of composite authorship; nevertheless we can see no justification for devoting 178 pages to surgical injuries and surgical diseases, but only 126 pages to hygiene. In fact, throughout the book the importance of preventive medicine has been subordinated to the giving of specific directions for the treatment of diseases and injuries. For example, in speaking of acute catarrhal otitis media, the author truthfully says that it occurs as a complication of catarrhal inflammations of the nose and throat; the treatment he recommends is, however, startling: "puncture of the drum-head in severe cases to let out the retained secretion and inflation of the middle ear through the Eustachian tube." Not

a word is said about suitable spraying and cleansing of the nasal passages, which will often prevent an ear inflammation, and will certainly in catarrhal cases greatly aid in the spontaneous recovery of otitis media or without other treatment than possibly gentle inflation of the middle ear. To advise perforation of the drum-head in such cases is pernicious advice; no laymen and few general practitioners are competent to perform the operation.

The statements about the use of drugs are at times misleading and at times dangerous. It will probably be news to many that ipecac is almost a specific in acute bronchitis; but we hope that no one will follow the author's advice in the administration of santonin for expulsion of round-worm: "one grain of santonin and one grain of calomel may be given in powder to a child 5 years old every three or four hours until the bowels are moved." Two one-grain doses of santonin have produced death in a child 5 years old, while smaller doses have produced dangerous toxic symptoms.

The Physician's Visiting List for 1897. Philadelphia: P. Blakiston, Son & Co.

This well-known visiting list has reached the forty-sixth year of its publication. The features which have contributed to its popularity in the past have been retained. The changes that were introduced last year gave such general satisfaction that the same plan has been followed in the present edition. As heretofore the list is issued in a "regular edition" for 25, 50, 75, and 100 patients per week, a "perpetual edition," which may be commenced at any date and used until filled, and a "monthly edition." The binding has been improved this year by using a heavier grade of leather than hitherto.

Diets for Infants and Children in Health and in Disease. By Louis Starr, M.D. Editor "American Text-Book of the Diseases of Children." Philadelphia: W. B. Saunders, 1896.

This book consists of a series of sets of diet lists arranged for healthy infants and children and for the sick. Each leaf contains on one side the printed directions for diet, with blank spaces for quantities and hygienic directions, and on the other side spaces for the date, the name and age of the patient, and the physician's name. The leaves are perforated, so that they can readily be torn out and handed to the parent. There are also leaves which contain recipes for the preparation of diluents and foods.

These diet lists can be handed to the parent or nurse, and will save the physician's time and promote accuracy in the carrying out of his wishes as to diet.

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MEDICAL MAGAZINE.

FEBRUARY, 1897.

INCOMPLETE EXPLORATION FOR OTITIC CEREBELLAR ABSCESS; DEATH; AUTOPSY.

By B. Alexander Randall, M.A., M.D.,

Philadelphia,

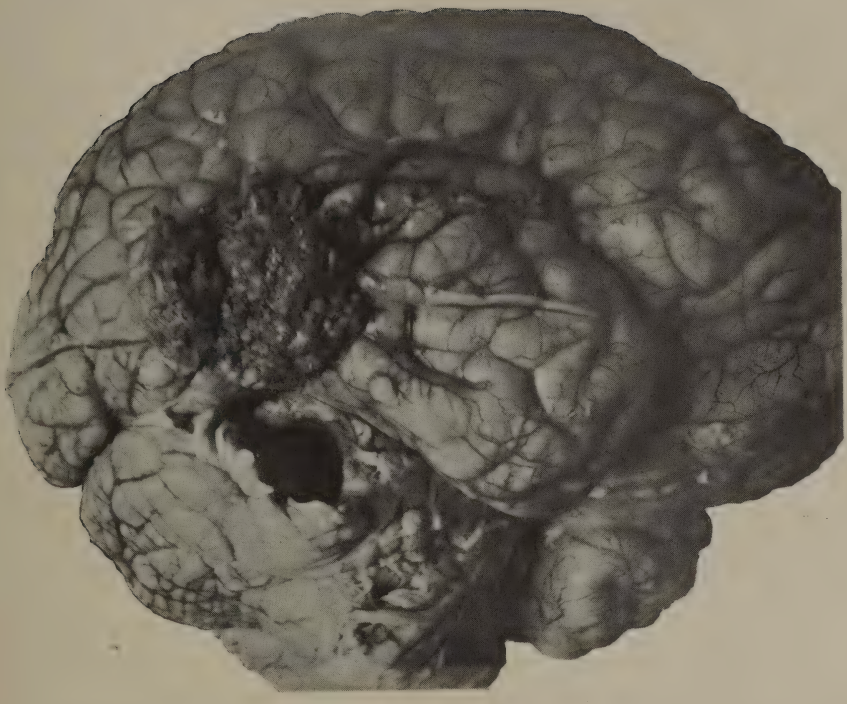
Professor of Ear-Diseases in the University of Pennsylvania and Philadelphia Polyclinic; Ophthalmic and Aural Surgeon to the Children's and Methodist Hospitals, etc.

Timothy ——, aged 11 years, came to the Eye and Ear Dispensary of the Children's Hospital on October 13, complaining of severe earache and beginning suppuration, a recurrence of old trouble. He received routine treatment as an out-patient for nine days, when facial paralysis, suggested from the first, became so marked and his condition so unsatisfactory that he was admitted to the house and put to bed with an evening temperature of 100° F. His condition now gradually improved and the paralysis slowly lessened, to leave practically no vestige by November 24. He had continued weak and inert, with normal temperature and pulse varying from 80 to 114, so he was kept in bed; but on the 17th, when making his first attempt to walk, he reeled and fell to the floor. There was no loss of consciousness; but the difficulty seemed rather syncopal than evidence of distinct inco-ordination. He presented no other symptoms at this time beyond slight oscillation of temperature.

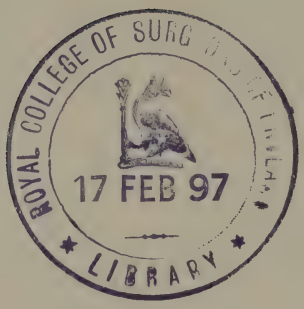
On November 24 his morning temperature, previously about normal, fell to 95.4° F. with pulse 68; at noon it was 95.2° F. and pulse 56, and only gradually rose to normal. On the 28th he had persistent vomiting, and his pulse fell to 45 and his temperature to 97° F. Pain was severe throughout the head. He was better by afternoon, and when seen in consultation with Dr. John Ashhurst, on the morning of the 29th, he was comfortable, apparently gaining, and

the pulse and temperature little subnormal. The diagnosis of brain abscess was concurred in; but all localizing symptoms except occipital and nuchal pain were lacking and expectancy advised. The condition changed little until the following night, when he was very restless for a while in spite of bromide, then collapsed and only slowly responded to stimulants. On the morning of December 1 he was better, denied any pain or tenderness; but revealed an increase in the strabismus, previously noticed, but now showing greater limitation of outward rotation of his right eye. The choking of the optic disks was little advanced over the condition four days before and intelligence was unaffected. The head was shaved and preparations made for an exploration of the cranium. He vomited after the administration of an enema and at noon his pulse was 48 and temperature 97° F.

At 3 P.M., in the presence of Professor Ashhurst and Drs. William J. Taylor, Dougherty, and Adams, and with the assistance of the residents, Drs. McDowell and Weber, I trephined the skull one and a quarter inches above the external auditory meatus and one-quarter of an inch behind it. No further localizing symptoms had presented; but he had an almost fatal collapse two hours before, relieved by hypodermic use of strychnine and whiskey, and suffered a repetition of it when ether was begun. Pulse and respiration could not be detected, but returned under artificial respiration; and a slight general convulsion occurred. Very little ether could be administered, but he was largely unconscious under the operation. The trephine had not been placed sufficiently high and the base of the pyramid was trenched upon, making the lower part of the trephine-button much thicker than the rest. The effort to press away the dura while cutting at the lower margin was not successful and dura and brain surface seemed lacerated when the button was lifted out with the chisel. The brain bulged very strongly into the opening, but offered no suggestion of abscess. A grooved director was pressed an inch directly inward and then an inch and a half forward, upward, and downward towards the most probable seats of pus-collection. No trace of pus was found; unless the streaks of pultaceous matter on the surface were not brain-substance, as I thought, but puriform lymph as considered by others. The opening was enlarged with the rongeur upward and forward without result. The general condition markedly improved at once, the pulse strengthening and rising to 80; so I was counselled to wait before proceeding to trephine the cerebellum. Slight vomiting occurred that night, and he was at times very restless and always disinclined to take food; but nothing in his mental or physical condition changed notably for three and a half days, except that he was slightly feverish, 98° to 99.8° F.



Right antero-inferior aspect of brain, showing cerebellar abscess and spheno-temporal hernia cerebri.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The first dressing was done forty-eight hours after the operation. The inner dressings were blood-soaked, but nothing puriform was found beyond a slightly greasy look of the gauze drain. There was slight *hernia cerebri* under the scalp-flap; and after all was ready for the repacking of the wound, diffluent brain-substance was seen to be oozing from a higher point. A drachm at least pressed out spontaneously, and as much more came under light stroking,—evidently from the highest point of my rongeur opening. This could hardly be regarded as in any sense the abscess which had caused the symptoms; yet I regarded it as partly absolving me from the necessity of promptly continuing my exploration in the absence of further indications. There was no practical change when dressed next day, beyond increased bulging. He had a restless night, was much weaker in the morning, and died rather suddenly at nine o'clock the next morning, ninety hours after operation.

An autopsy was made six hours after death. There was moderate rigidity; little notable change about the wound. One tiny puriform point was noted at a stitch wound; but the rest of the tissues concerned were sweet and merely sanious. The calvarium was not specially adherent, the dura seemed normal on both surfaces, the sinuses were rather full of fluid blood with very slight dark clots, and the convexity of the brain showed engorgement of the vessels with cloudy lymph along a few of them. The cerebral fluid was in normal amount and nearly free from turbidity; and no adhesions were met until in cutting away the tentorium on the right, where firm plastic lymph fastened the cerebellum so tightly that it was torn in detaching it. The dura over the tympanum seemed perfectly normal until cut, when a small area of pachymeningitic granulations was revealed. The vicinity of the lateral sinus was even suspicious in but a small area, where the dura seemed thickened; but the underlying bone presented none of the congestion of the tegmen. The tympanic cavity contained pus and swollen mucous membrane.

Green fetid pus was found to be oozing from minute tears in the right cerebellar lobe, and section evacuated between one and two ounces, partly flocculent. The abscess seemed spherical, as large as a hen's egg, and separated from the lateral surface by a thin, dense layer of cerebellar tissue. The capsule was well-marked. No other pus-collection was found; and the spheno-temporal lobe, although breaking down in red softening at the seat of puncture, showed no suppuration.

It is reasonably certain that exploration of the cerebellum would have evacuated the abscess and given the patient a chance for life.

A CASE OF MATERNAL IMPRESSION.

By A. D. Whiting, M.D.,
Philadelphia.

Mrs. A., colored, aged 26 years, primipara, was admitted to the German Hospital suffering with severe burns of the body, head, and extremities. Patient was pregnant, and said that she had been expecting to become a mother for the past few days. The burns were very extensive, the back, posterior part of the thighs, the perineum, and external genitalia, and the head being markedly affected. The child was alive on admission, about a half-hour after the injury to the mother had been received, as was evidenced by its movements in the womb and the heart-beats. Nine hours after admission a male child was delivered, dead, after the mother had been in labor about two hours. The presentation was l. o. a., and the delivery of the child was accomplished without any difficulty, the uterine force being apparently strong and regular. Efforts were made to resuscitate the

Showing areas of maternal impression.

child, but without avail. The mother died ten hours later, or about twenty hours after receiving her injury. The child presented fresh-looking blebs on the legs, arms, and face, and extensive blisters on the back, the back of the thighs, and the scrotum, the parts affected corresponding to a marked degree to the burned areas of the mother. This was especially noted with regard to the back and the scrotum, the back and vulva of the mother having been severely affected. The accompanying photograph, kindly taken by Mr. Wilbert, the druggist of the hospital, shows beautifully the condition of the child.

Many interesting points were developed in the case. On admission, the fetus was alive. A prognosis of fatal termination, as far as the mother was concerned, was given, and the question of saving the child was brought forth. A Cesarean section was advised with this end in view, but the husband positively refused his consent to an

operation. It is probable that such an operation would have been of no avail, as it is likely that the child received the shock from the burns almost coincidently with that received by the mother, and that a living child would have been delivered only to succumb to shock and the extensive injury from the maternal impression of the burns.

Statistics show few, if any, cases of maternal impressions in which the exciting cause of the impression was received by the mother so late in pregnancy. Keating's Encyclopedia cites two cases somewhat similar, in one of which, reported by Wilson, the mother had received a burn of the hand when eight and a half months pregnant. The child had fresh-looking blebs on the back of the corresponding hand. The other case, reported by Hunt, was one in which the mother had received extensive burns of the body and extremities during the last few days of pregnancy. The child was delivered thirty-six hours after the injury, still-born, with impressions corresponding to the burns of the mother.

It would be interesting could one state positively whether the child succumbed to the shock received by the mother or whether it died from the effect of the maternal impression directly; also, whether a living, healthy child would have been delivered had an operation been performed, or whether the child would have presented a condition similar to one caused by direct burns.

SUCCESSFUL EXTRACTION OF A FRAGMENT OF STEEL FROM THE VITREOUS CHAMBER BY THE HIRSCHBERG MAGNET.[1]

By G. Oram Ring, A.M., M.D.,

Ophthalmic Surgeon to the Episcopal and Samaritan Hospitals, Philadelphia.

J. S., male, aged 28 years, was admitted to the Episcopal Hospital June 5, 1896, at 3 P.M., with the following history:

Six hours prior to his admission he was standing near an anvil, giving directions to an assistant, when the latter, by mistake, struck the anvil an oblique blow, thereby chipping a piece of steel from it, which flew up and penetrated the right lower lid obliquely, at the junction of the middle and outer third, and, striking the eyeball, ploughed its way into the vitreous.

[1] Read before the Ophthalmic Section of the College of Physicians of Philadelphia, November, 1896.

The wound of entrance was nearly vertical, five millimetres in length; the upper border being eight millimetres from the lower corneal margin.

The eye was evidently turned towards the right at the time of the accident, and the course of the foreign body, after reaching the vitreous chamber, was upward and inward, lodging finally on the inner portion of the anterior third of the vitreous, opposite the nasal border of the iris, where its position could be distinctly outlined.

The cornea, iris, and lens were normal in appearance. The pericorneal injection at the time of admission involved the lower half of the eyeball; a very minute bead of vitreous extruded from the wound. In the infero-temporal portion of the eye-ground was a huge, irregular extravasation of blood, nearly two disks diameter in width, and radiating from it in various directions were numerous bulbous hemorrhages.

Running up and out from the extensive extravasation noted, and widening somewhat at the upper and outer periphery of the fundus, was a narrow band of dimly-exposed sclerotic, over a portion of the centre of which coursed one of the retinal vessels.

It should be observed that the point of lodgement of the foreign body was distinctly removed from the region in which the pronounced hemorrhage and the choroidal rupture were observed.

Vision, O. D., $\frac{20}{200}$; O. S., $\frac{20}{20}$.

The writer's decision to extract the steel at once with the Hirschberg magnet—were that result possible—was despoiled of its force by the discovery that the battery had been sent away for repairs.

The eye was cleansed every hour with a solution of bichloride of mercury, 1 : 10,000. Atropine was instilled, and ice-cold compresses were applied constantly until 3 P.M., the following day, just thirty hours after the accident.

There was scarcely any pain in the eye as a result of this treatment, and its condition was practically unchanged when compared with my examination of the previous day, except that the foreign body had sunk a trifle lower in the vitreous.

Equipping myself this time with a single-cell Seiler cautery battery, I prepared to attempt the extraction of the steel. All instruments were rendered antiseptic, a 4-per-cent. solution of cocaine was freely instilled, and a stop speculum introduced.

A small horizontal cut was made in the conjunctiva, about six millimetres from the inner corneal edge and slightly below it, as the nearest available point for operation.

The section through the sclera and into the vitreous was made with a Graefe cataract knife, and while an assistant separated the

edges of the conjunctival wound, I inserted the straight tip attached to the Hirschberg magnet. After a gentle movement within the vitreous I withdrew it, only to be disappointed by the non-appearance of the coveted intruder.

A second introduction was entirely successful, the flat and somewhat irregular piece of steel, measuring 6 x 4 x 1 millimetres, being this time attached to the magnet.

No stitches were inserted, the treatment outlined above was continued, and the recovery was prompt and uneventful, the eye being so quiet on the third day that the patient was quite sure that his detention in the hospital was no longer necessary. He was discharged in one week. The hemorrhages gradually absorbed, and the patient visited me during the present week, when the vision was found to have risen to $\frac{20}{70}$. The vitreous was clear. In the region in which the intense hemorrhage was noted, there is now an area of extensive atrophy of the choroid, bounded by pigmentary deposits, with the easily recognized choroidal rupture, running up and out as previously described. It is now impossible to recognize the point of entrance of the foreign body.

The danger of the development of iridocyclitis or panophthalmitis, after fragments of metal have penetrated the eyeball, emphasizes the importance of their early removal. Flying pieces of metal, even though they have been raised to a red heat by reason of hammering, and thus disinfected, will act as chemical irritants by becoming oxidized within the eye.

If the accident is at all recent, there will be no difficulty in finding the wound of entrance; but should the ophthalmoscope, the entoptic test, and the taking of the visual field, all fail us in our search, it is entirely possible that a careful examination of the sclera with a probe will at some point elicit pain, and it is likely, as suggested by von Graefe, that the foreign body will be in a corresponding part of the vitreous.

Another diagnostic point, upon which Dr. J. Hirschberg[1] lays considerable stress, as available in certain cases, is the change in color of the iris. In this way he determined the presence of a destructive piece of iron in the eye, which he removed, thereby preventing enucleation.

Frequently, according to this author, when a piece of iron of perceptible size is arrested within the interior of the eye, from six months to two years, there is a peculiar, dirty, dark-brown discoloration of the iris, which can be perceived even when the iris was originally of a brown color.

[1] Centralblatt für Augenheilkunde, September, 1896.

He questions the view of von Hippel, that the change in color of the iris is more apt to be yellowish green than rusty brown, when caused by the presence of a fragment of iron in the eye, and believes that this coloration is absent only in rare cases.

It is interesting to note in this connection that the same author believes that in vitreous hemorrhages, as, for example, those secondary to diabetic retinitis, an iris which was originally blue will, after a time, become greenish.

In addition to these brown and green discolorations, there is also a yellowish tinge, caused by inflammatory degeneration quite apart from the presence of a foreign body.

If all the methods enumerated above have failed to show the presence of a foreign body, the Röntgen rays may be utilized in some instances with brilliant results. The writer has recently had under his care a patient on whom the latter process was used most successfully through the courtesy of Dr. M. J. Stern.

The method of operating with the magnet, which is deemed most advisable, will depend upon the location of the iron or steel. Should it lie near the wound of entrance, the magnet may be inserted through this point, but it is frequently true, as in the case reported, that it has been projected to the opposite side of the vitreous, in which event less disturbance will be created by making a new meridional wound in the sclera and inserting the magnet through it.

The remarks of Fuchs is pertinent, "that no fixed rule can be laid down for the procedure, as almost every individual case has its peculiarities and calls for an operation especially devised for itself."

The first effective employment of the magnet was by MacKeown, of Belfast, in 1874 (quoted by Noyes). Gruening[1] employed a cluster of magnetized steel-rods in 1880. Bradford,[2] published a paper upon the use of the electro-magnet. Hirschberg[3] had an instrument made in 1877.

Of 154 cases known to literature at the time of the publication of Neese's paper,[4] normal acuteness of vision was obtained in sixteen cases, 10⅘ per cent. Fair vision in forty-eight cases, 30½ per cent. The form of the globe without sight was preserved in twenty-seven cases, 17½ per cent., in twelve of which the cosmetic results were satisfactory.

In sixteen cases, subsequent enucleation was inevitable, 10⅘ per

[1] New York Medical Record, May 1, 1880.

[2] Boston Medical and Surgical Reporter, March 31, 1881.

[3] "Der Electromagnet in der Augenheilkunde," p. 9, Berlin, 1885.

[4] Noyes, "Diseases of the Eye," quoted from Archives of Ophthalmology, Vol. XVII, p. 241.

cent., and in fifty-five cases the operation was unsuccessful from the beginning, 37 per cent.

At the Ophthalmic Congress at Heidelberg, August, 1895, Dr. Haab,[1] of Zurich, recommends the use of a very powerful magnet, weighing thirty-eight kilogrammes, which enabled him to withdraw pieces of steel lodged in the interior of the eye and to draw them out by the same path by which they entered,—even through the lens and anterior chamber. He thinks such a magnet far preferable to the smaller ones which must be introduced into the eye. In 60 per cent. of the cases observed, the foreign body lodged in the deep portion of the eye was withdrawn, and vision re-established.

In the discussion which followed, Wagermann doubted the advisability of using the powerful magnet when the foreign body is lodged in a vascular portion of the eye, such as the ciliary body. He fears that the strong attraction will produce ruptures or other serious accidents.

In the January, 1896, number of the *Annals of Ophthalmology and Otology*, Dr. Harry Friedenwald, of Baltimore, reports three cases of foreign bodies within the eye, removed with the galvano-magnet; one, a piece of steel, embedded in the iris and capsule of the lens with formation of partial cataract, which matured after an attack of typhoid fever.

A second, in which the steel was removed from the periphery of the retina and ciliary body, with restoration of normal vision; and a third in which the minute piece of steel was removed from the macular region, but in which central vision was lost, the retina partially detached, and the eyeball preserved with eccentric vision.

Dr. Oliver, in the Wills Hospital Report for 1895, details a successful extraction of steel from the iris by the galvano-magnet, and refers to two additional cases occurring in his clinical service.

Dr. Zeigler, at the April meeting of the Section, also recorded a most gratifying magnet operation, the steel having lodged in the back of the vitreous.

Hirschberg,[2] at a meeting of the Berliner Medicinische Gesellschaft, held April 3, 1896, gave statistics of 100 extractions of iron splinters from the inside of the eye by his electric magnet, the first being in 1879.

He reports the gratifying average of fourteen good results out of fifteen cases, and declares that during the first ten years of practice, during which period the magnet was not in use, he had never

[1] Annals d'Oculestique, September, 1895.

[2] Abstracted by Dr. H. V. Würdemann, Annals of Ophthalmology and Otology, October, 1896, Berliner klinische Wochenschrift, June 2, 1896.

seen a good result where there was an iron splinter in the vitreous. During the succeeding ten years with the magnet, he had thirteen cases with seven brilliant successes.

He exhibited a case in which normal vision followed the extraction, with the magnet, of a piece of steel measuring sixteen millimetres in length, which had lodged in the vitreous.

Hirschberg[1] says, if a foreign body is embedded in the eye-ground without irritation, and with good or moderate vision, no operative interference is necessary. He warns us, however, of the possibility of its being dislodged from its capsule at any time, and thus inducing irritation. Should it have struck the nerve, even though the eye is unirritated and the vision good, he advises operation, as experience shows that later in such cases the vision is sure to be lost.

Hilderbrand[2] is of the opinion that cases in which the vision continues good, notwithstanding the presence of a foreign body in the eye, are of great rarity.

Haab[3] suggests the use of the large magnet, and, if this is unsuccessful, and the foreign body occasions no irritation, it should be allowed to remain.

Knapp[4] has found that in many cases where foreign bodies are small, and unaccompanied by important fundus changes, they may remain permanently in position without harmful results, and no effort should be made to remove them unless irritative symptoms develop.

Elschnig[5] claims that should the foreign body, as seen early with the ophthalmoscope, occasion so trifling a reaction as not to be encapsulated, one can safely assume that it was aseptic, and have no further question regarding the safety of the eye.

Von Hippel takes issue with Elschnig's opinion, and his conclusions indicate that the presence of the foreign body will promote retinal degeneration, even if not encapsulated.

Knapp and Hirschberg lay especial stress upon the size of the splinter, but von Hippel believes the risk of retinal degeneration exists even when the splinter is very small.

Von Hippel[6] reports eight cases of foreign bodies in the vitreous in which both the large magnet of Haab and that of Hirschberg were utililized in the effort to remove them. In one case the Haab method was successful after the Hirschberg had failed, in a second

[1] Von Graefe's Archiv für Ophthalmologie, November, 1896; E. von Hippel, Bemerkungen über Magnet Extraction.

[2] Ibid.

[3] Ibid.

[4] Ibid.

[5] Ibid.

[6] Ibid.

case the splinter was extracted by means of the Hirschberg magnet after the Haab method had been ineffectual. In the remaining six cases the foreign bodies could not be removed by either magnet; but one of the latter series cannot be properly considered in judging of the comparative values of the two methods, as the intruding substance was a small fragment of stone.

Surely, from the study of the cases noted above and others previously reported, the opinion of von Hippel is justified that, as the value of each method is unquestioned in certain carefully-selected cases, it is important that every well-equipped hospital should be provided with the Haab as well as the Hirschberg apparatus.

AUTO-INTOXICATION.

By Samuel Wolfe, A.M., M.D.,

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The key to modern pathology is intoxication. A symptom-complex being given, to find the alteration in structure and the cause of that change in a definite chemical substance would be ideal.

In the present state of science, while much in this direction has been accomplished, there remains still a large field to explore, and a great mass of evidence to study and weigh.

Whether the *materses morbi* is a poison formed in the laboratory of the chemist, the resultant of the organic life of a vegetable parasite, or the product of physiological changes within the organism and destined for excretion, the class of facts which present themselves ultimately to the pathologist bear a close relation to each other.

To the therapeutist, too, there must occur the same thoughts in all instances, of primarily an antidote, then an eliminant, and, finally, means to reconstruct and repair organic damage.

A product of physiological activity, which is intended for excretion but is not eliminated, might be equally considered as an auto-intoxicant, with one which is excreted and then reabsorbed. But the ordinary usage of the term auto-infection seems intended to cover only the latter class. To be still more exact, we must remember that these excretory products come in contact with foreign matters on the surfaces of the excreting organs, reacting with which special deleterious compounds may be formed, and then absorbed.

Thus the cutaneous tract affords lodgement for impurities of all sorts, and is constantly exposed to the atmospheric air. The respira-

tory tract is only in a lesser degree affected in the same way. The urine in contact with the epithelial detritus from the bladder undergoes ammoniacal decomposition, when retained, and the genital tract of the female is very often a hot-bed for putrefaction.

But probably more than all, the alimentary canal affords the best source of auto-infection. With the constant introduction of ill-selected food and drink, and the innumerable deleterious articles that civilized man contrives to offend it with, there is no mystery surrounding this fact. But even with this abuse, the chances for escape might be comparatively good if peristalsis were to continue sufficiently active. An indigestible or over-heavy meal in the normal individual will cause either vomiting or a prompt crapulous diarrhea. But many repetitions of such indiscretions soon result in a tolerance of these irritants, and in the slow weakening of the muscular coats of the stomach and intestines, with the chronic indigestion and constipation with which we are all so familiar.

With these conditions established, the constant absorption of intoxicating and infectious matters from the intestinal tract is not only possible, but highly probable.

Of the exact nature of the toxins which are thus formed and find an entrance to the circulation, the knowledge is at the present time very incomplete. Studies in this direction are being made by many able pathologists, but the difficulties are great, and the progress consequently slow.

The appearance of indican in the urine in increased quantity is held to indicate auto-toxicosis. Connected with this is a disturbance of the ratio of the normal sulphates of the urine. Preformed sulphuric acid is found absent while the combined and ethereal sulphates are increased.

Clinically the intoxication causes a train of symptoms, for the greater part referable to functional disturbances of the nervous system. It is reasonable to assume that the inherent condition of the nervous system, the constitution or temperament of the individual may co-operate in the *rôle* of an etiological factor. Thus, while some individuals may suffer severely, others may, under the same degree of intoxication, be but slightly affected. This observation may, however, be applied to all forms of nerve-poisons.

Wherever such cerebral symptoms as somnolence, lethargy, stupor, or coma may appear, this source of their production should be considered. In typhus fever, lead-poisoning, peritonitis, and obstruction of the bowels these symptoms are apt to be prominent, and in all of these diseases it has been experimentally found that the quantity of indican in the urine is increased. This same increase of indi-

can has also been observed in trichinosis, catarrh of the stomach, hemorrhage into the stomach, cholera, carcinoma of liver and stomach, and in diseases of the small intestine generally. In this whole class, nervous symptoms indicating disturbance of the higher centres are generally prominent at some time in the course of the disease.

A case of typhoid fever, which at this writing is not yet convalescent, has had jactitation, carphologia, and active delirium, all in an extreme degree. These symptoms seemed to bear a curious relation to the temperature, being always most pronounced when the temperature was least inclined to rise. Thus, at a temperature of 101° to 102° F. there was great restlessness and agitation for days together, in spite of the administration of sedatives, while when the temperature stood for a few days at 103° F. and above, the patient was comparatively quiet. These vacillations in the temperature occurring at least three times thus far in the course of the disease, with always the same relation to the nervous symptoms, the significance of their connection is very forcibly established. Recognizing the possibility of their being due to auto-intoxication, I administered cathartics in several instances, and each time with decidedly beneficial effects.

The symptoms of neurasthenia, if not actually produced by auto-infection, as I believe they are in some instances, are without doubt maintained and fostered by it to a very considerable degree.

Recent researches have shown that this etiological factor enters very extensively into insanity. While I cannot draw on my own experience here, the following case, which very closely simulated general paralysis of the insane, illustrates the extreme degree of nervous break-down which can result from this cause.

B., aged 40, Englishman by birth, a carpenter by occupation, was admitted to the Samaritan Hospital on October 23. Two weeks before admission he had been seized with violent general convulsions, which recurred frequently during a period of twenty-four hours. They were epileptiform in character. Previous to the seizure he had been able to follow his usual occupation, but had for some time complained of weariness, especially in his lower extremities, and had been somewhat dejected in spirits. The day following the convulsive attack, he seemed to be as well as prior to it, but a day later he became delirious and unable to walk, or even to stand.

At the time of admission his mental state was bad. He was confused and wandering in all his ideas, and could not find words to express himself without being prompted. The condition was not a true aphasia, and it was afterwards learned that he had all his life had a halting speech. The speech may be said to have been ataxic. He could, on account of the mental condition, give no satisfactory

account of himself, but managed to convey to the attendants some facts about his former life. His face was much suffused, and his look apathetic. The pupils were somewhat contracted and irregular in outline. Ophthalmoscopic examination revealed a bilateral slight papillitis. There was incontinence of urine and feces.

An examination of the upper and lower extremities revealed some weakness of the muscles, but no wasting and no sensory disturbances, so far as could be ascertained, in his present mental state. The knee-jerks were absent, and the superficial reflexes also. There was extreme inco-ordination of both lower and both upper extremities, and it was owing to this fact that he was unable to stand. The tongue was heavily coated and dry. The temperature and pulse were normal, and remained so throughout the whole period of the disease, except on one day, when it suddenly went up to 103° F., and remained there for a few hours. He was given full doses of quinine, for a few days, as soon as this was observed, and no subsequent rise occurred.

He remained in the condition above described for about three weeks, with some improvement in his mental condition towards the end of that time, as well as in the inco-ordination. During the next two weeks he improved rapidly, so that at the end of that time he could walk perfectly well, could touch any part of the body as directed with his finger-tip, had no incontinence, no mental obscuration, or difficulty of speech, beyond what was natural with him.

He had been treated with daily doses of salines, thirty grains daily of potassium iodide, and small doses of ergot for about two weeks. He was then put on silver nitrate, one-quarter of a grain, three times a day.

There was no history of syphilis attainable, and the symptoms in the case hardly point that way. There was no marked tremor of lips and tongue, such as is a very constant symptom of general paralysis, but otherwise the case very closely resembled a paresis of the ascending variety, and of very rapid onset and progression. I regard it as due to auto-intoxication, as neither syphilis nor paresis would have cleared up under the treatment.

It is highly probable that migraine, hysteria, and even epilepsy are frequently associated with this cause.

In these and many of the other neuroses the course of the symptoms would indicate an accumulation of something that gives rise to a "nerve-storm," a seizure, or a discharge, by whatever name it may be called. The indications also point to an elimination or conversion into comparatively harmless products of the offending material during the attack. In this way we have a periodicity established,

which belongs more or less to all these troubles, and which occurs independent of medicinal influences.

A few days ago, a young Hebrew came into my office, stating that for two years he had suffered from a curious round of changes in his feelings and disposition. For a period of two to three weeks he would feel perfectly well, happy, and energetic, then with the suddenness of a cloud floating over the sun he would become melancholy, dejected, and irritable. His head would ache almost constantly, his muscles would tire very easily, and a heavy and oppressive feeling was present in the hypochondria. He cannot sleep at night, and his feet and hands are cold. At the end of two or three weeks this state would pass, almost as suddenly as it came on, into his previous good health, only to be followed after the same interval by another period of gloom and incapacity. His bowels were very sluggish, and his tongue somewhat furred.

A transition of types like this into migraine or epilepsy is quite often observed. I have seen attacks of migraine displace epilepsy and the reverse, where the disease in either instance was typical in all its features.

That purgation is an essential part of the treatment in these cases is evident. The salines of the less drastic type are the best. A heaping teaspoonful of Rochelle salts, or a wine-glass of natural purgative water, three times a week, taken on rising in the morning, are available. In some special cases a blue pill or a few grains of calomel with sodium bicarbonate can occasionally precede the saline in the evening.

The mineral acids are useful either alone or in connection with small doses of sodium salicylate, phenacetin, acetanilide, or antipyrin.

Of course, the diet, the habits, and the occupation of the patient should be properly regulated.

Three Cases of Profuse Hemorrhage through Defloration.

Chaleix writes that during the first sexual intercourse injury may result to the labia minora and vestibule as well as the hymen. If the hymen is very thick, the membrum virile may be separated at its base, the posterior wall of the vagina torn even into the rectum, and a large recto-vaginal fistula formed. The writer describes in detail three cases where this latter injury occurred to a greater or less extent, associated with profuse hemorrhage.—*Gazette hebdomadaire de Médecine et de Chirurgie*, No. 45, 1896.

PUERPERAL NEURITIS.[1]

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For a brief discussion with you of the subject of puerperal neuritis, I shall use as a text the case of a woman who applied to the Infirmary for Nervous Diseases for treatment, and who was under the care of Dr. Morris J. Lewis, to whose kindness I am indebted for the privilege of using the notes of the case. She was 30 years of age, and gave a negative previous history. After the birth of her first child, which was without noticeable complications, she suffered pain and numbness over the flexor surface of the left forearm. There very soon followed a weakness of the flexor muscles on the same side, which first manifested itself as difficulty in holding the comb in the act of dressing her hair. This condition varied but little, and was not very marked until after the second labor, when, without further complication, the symptoms became more intense. Finally, after the third child was born, the right arm became the seat of a like trouble, and the symptoms in the left arm grew still worse. The woman presented herself for treatment four years after the onset of the affection, when an examination revealed the following facts:

The hands could not be raised to the head, and flexion of the fingers was very weak, almost impossible. Otherwise there seemed to be no demonstrable motor disturbance. The nerve-trunks were not tender to pressure, and sensation was only slightly dulled in the flexor surfaces of the forearms.

The thenar and hypothenar eminences were flattened on both sides, and the interossei muscles were quite wasted. In every other respect there is but negative evidence. As the patient was under observation but a short time, the further progress of the case is wanting.

This case illustrates the arm-type of puerperal neuritis, and though there was not elicited any history of septic infection after birth, the fact that the symptoms began shortly after labor without other cause would seem to justify the suspicion at least that the

[1] Read before the Barton Cooke Hirst Obstetrical Society, University of Pennsylvania.

cause existed in some morbid blood condition peculiar to the puerperal state.

This leads up to the study of the cause of puerperal neuritis. An intelligent inquiry into this will be the easier, it would seem, after a review of the causes of neuritis in general. We shall briefly mention these causes, dwelling especially upon the forms of neuritis which are septic in origin.

There is (1) the toxic form of neuritis, which includes those cases which are the result of the action of a poison either metallic, as lead, arsenic or mercury, or non-metallic, as alcohol.

(2) There is the rheumatic form of neuritis, under which head comes the facial or Bell's palsies.

(3) There is a group of cases which occur in the old and in cachectic patients, the result of degeneration or malnutrition. This is the senile or cachectic variety.

(4) There are a number of cases due to the action of micro-organisms, which Gowers calls the endemic variety. These cases include those the primary or secondary consequences of malaria or beri-beri.

(5) There is the toxemic form. In these cases the nerve-lesion is occasioned by a toxic blood state due to a micro-organism or some chemical action. Examples of this variety are the cases of neuritis in leprosy, after diphtheria, in syphilis, after small-pox, typhoid fever, scarlatina, and in tuberculosis. It is to this form that the case under discussion should be classed.

Finally, trauma is a frequent cause of neuritis, and may be effected in a number of ways. There are some cases of neuritis after labor which belong to this variety. They depend upon the pressure on the nerves in the pelvis by the child's head in its descent through the pelvis, or by pressure exerted in the application of the forceps.

But it is with the cases of neuritis occurring in the puerperal state, which are of infectious origin, that this paper is chiefly concerned.

It is no new thing to see lesions of the nervous system, which have for their cause an infectious process. The palsies occurring as sequelæ to the infectious fevers are familiar sights to the clinician. Moreover, the possibility of infectious origin of nerve-lesions has been conclusively demonstrated experimentally. Gilbert and Lion, in 1888, by inoculating cultures of a microbe taken from a case of endocarditis, succeeded in causing paralysis in rabbits in a number of instances. In some cases the paralysis was confined to one limb, more often it was paraplegic, and in some it was general.

Babinski and Charrin, in the same year, induced paralysis in animals by inoculating them with the bacillus of blue pus.

Roux, Yersin, Grancher, Martin, and Ledaux-Lebord injected the microbe of diphtheria and the tubercle bacillus with similar results. The paralysis is probably connected with the action of a soluble poison,—the secretion of the microbe.

Again in 1888 Manfredi and Traversi, by injecting cultures of the streptococcus pyogenes aureus in a frog, guinea-pig, and rabbit, caused paralysis, which he afterwards proved was of central origin.

Though these palsies are not by any means always peripheral, they demonstrate the fact that nerve tissue is susceptible to the poisonous influence of the products of micro-organisms.

It was Kast who, in 1886, described for the first time a case of puerperal neuritis of infectious origin. The ulnar and median nerves were involved, the symptoms developing soon after labor. Shortly after Möbius reported a number of cases and described the disease more fully. Since then numerous cases have been added to literature, and Eulenberg, in 1895, in a paper, gives a table of thirty-eight cases including his own four cases. Since then Mader has reported three cases, of which one is not really a typical example, but rather a case of neuritis of pregnancy, to the character of which reference will be made again. Among these thirty-eight cases there are a few which are doubtful, the possibility of pressure as a cause existing in a certain number.

A study of these cases shows that there are several types assumed by the disease. Of these the most common is the arm or brachial type. The poison seems most frequently to select the ulnar and median nerves. The nerves may be involved on one or both sides. With slightly less frequency the nerves of the legs are the ones attacked. Usually the palsy is limited to the muscles supplied by the peroneal nerve. This is called the peroneal type, or by some the crural or lumbo-sacral type.

Again, the disease may begin as a brachial type, the crural type developing finally. This is less than half as frequent as the arm type.

Quite rarely there are cases in which the disease assumes a diffuse or general character. It may be subacute or acute, ascending or descending, with occasionally involvement of the cranial nerves. The symptoms are more severe than in the local form and often simulate Landry's paralysis,—as seen in Sottas's, Lunz's, and Eulenberg's cases.

The disease is ushered on by redness, tingling, smarting, or pain in the distribution of the involved nerves. The symptoms develop

immediately after labor in some cases, but may be delayed as long as seven weeks, as in a case reported by Kast. Usually the onset is within two weeks after labor.

Very soon the muscles grow weak, and in those cases of long duration they become atrophied. The electrical reactions are those typical of neuritis, showing in the severer cases the reactions of degeneration,—*i.e.*, AnClC>CaClC.

The duration of the disease varies according to the intensity with which the poison has attacked the nerves. As a rule, many weeks elapse before an encouraging result is obtained. In some cases there is a history of great improvement in two weeks; in others, after years, there is atrophy and weakness of muscles remaining. (Relle places the duration of the disease at two years.)

Möbius claimed recovery almost always takes place, but this conclusion is not borne out by the evidence now at hand. A small percentage only recovers entirely. It is not unusual to see the paralysis persisting from labor to labor, growing worse after each confinement. It may recover entirely during the interval between the labors, as in a case observed by the author. In this case the paralysis was of the arm type, the symptoms beginning immediately after each of four labors with entire recovery each time. There was only a slight weakness observed without sensory symptoms or demonstrable atrophy, a distinctly mild case.

Why the poison should select the median, ulnar, and peroneal nerves most frequently, leaving the other nerve-trunks intact, is a mystery. We witness this selection, however, with other poisons, as in diphtheria and lead-poisoning. In the former the eye and throat muscles are the ones most frequently palsied; in the latter the extensors are chosen by the poison with astonishing regularity. Besides the cases of neuritis of infective origin, those caused by pressure deserve here a passing mention.

As early as 1861 Imbert-Goubeyre described the puerperal palsy. Bianchi, in 1867, reported five cases due to pressure on the nerves during labor. Lefevere (1876) reported four observations of like character. Vinay, in 1887, added a case to literature in which the anterior tibial muscle, common extensors of the toes, extensor proprius pollicis, and extensor brevis digitorum were involved. The patient recovered in a month. Since then observers, including C. W. Burr, Mills, Saville, and others, have reported cases of this character. Saville claimed that when the head entered one of the lateral gutters of the pelvis, the nerves which form a part of the tissues lodged there, become susceptible to pressure. The muscles affected are usually those supplied by the peroneal nerve. The application of the forceps

in some cases is to blame for the pressure. That pressure is the only influence bearing upon the causation of these cases of traumatic neuritis is an open question. It can readily be imagined that a nerve-trunk, whose vitality is lowered (as all tissues are) by the processes of pregnancy and labor, would be more susceptible to the influence of pressure than a healthy nerve. Pressure on a nerve-trunk in an individual intoxicated or under the influence of ether, so often results in a traumatic neuritis as to reasonably suggest a second etiological factor in these cases. The symptoms are the usual ones found in all cases of traumatic neuritis,—pain, palsy, wasting, reactions of degeneration, and sometimes loss of sensation.

We have now discussed the puerperal palsies of infectious and traumatic origin. There remains yet a third form which, though not truly puerperal, has such close relation with that period as to justify its description here. The history is briefly this: after excessive vomiting during the latter stages of pregnancy a weakness of all members develops. This persists until long after delivery and in two cases terminated fatally. These are rare cases and few have come to publication.

Whitefield, in 1889, reports a case of a woman, 40 years of age, of temperate habits, who, during her seventh pregnancy at the sixth month, suffered from severe and continuous emesis. The legs became weak, and four days after labor were the seat of great pain. There developed at the same time formication in the arms. In twelve days both arms and legs became completely palsied. Seven months later she had not entirely recovered, although there was considerable improvement.

Salowjew, in 1892, cites a case similar in character in which there was pain along the nerve-trunk and reactions of degeneration. The case was fatal, and the post-mortem examination proved the presence of disease of the nerves.

In 1895, Vinay, Mader, and Eulenberg reported three more cases. Vinay considered that the vomiting gives rise to fermentation, producing the toxins which act on the nerve. It occurred to him that the paralysis and vomiting might be results of a common cause.

Köster considers that the vomiting so lowers the nutrition of the body as to influence tissue-change resulting in the development of poisonous chemical products.

It now remains to discuss with you the treatment. This I shall make as brief as possible, since there is no special treatment outside that ordinarily used in other forms of neuritis.

The first indication is to remove the cause. Antiseptic treatment of the vaginal canal and the other usual measures to combat

septic infection should be employed. The treatment of the general condition by building up the health of the patient is imperative. Rest in bed and careful feeding are especially important. For the relief of pain, warm fomentations, hot baths, hypodermics of morphine, carbolic acid, or both, may be used.

After the acute symptoms have subsided, massage, electricity, and strychnine, the last by mouth or hypodermically, are indicated.

Tendency to deformities from contractions of opposing muscles should be anticipated and prevented by passive movements.

The literature is purposely omitted. The writer will be very glad to furnish abundant references to any who are desirous of studying the subject further.

GASTROSTOMY FOR RELIEF OF MALIGNANT NEOPLASM OF THE ESOPHAGUS, PERFORMED BY THE SABANEJEN FRANK METHOD.

By Melvin M. Franklin, M.D.,

Visiting Surgeon to the Charity Hospital and the Out-Patient Department of St. Joseph's Hospital, Philadelphia.

It is unnecessary to state that any operative measures undertaken for the relief of malignant growths of the esophagus are merely palliative, and the particular one to be selected in a given case will depend upon the conditions present.

The relief of the suffering caused by the pain resulting from the passage of irritating foods over the ulcerated surfaces and from the antemortem period of starvation more than compensates for the risk incurred from the operation.

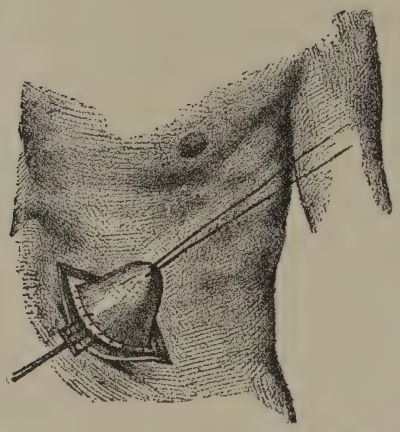
It has been shown by experience that by asepsis and improved technique this procedure is not of itself attended with a high mortality. The treatment commonly employed—namely, dilatation of the stricture by bougies—is not only a very painful but frequently a dangerous one. Several cases have been reported recently where death rapidly ensued because of perforation of the wall of the esophagus.

Although the present case came under my observation comparatively late, the operation was undertaken on account of the objection raised to the passage of bougies and their failure to afford relief.

History—E. R., male, aged 56 years, white, married, family

history negative, came under my care during the latter part of March, 1896. Upon examination it was found that he suffered from stricture of the esophagus. It was with great difficulty that the

FIG. 1.

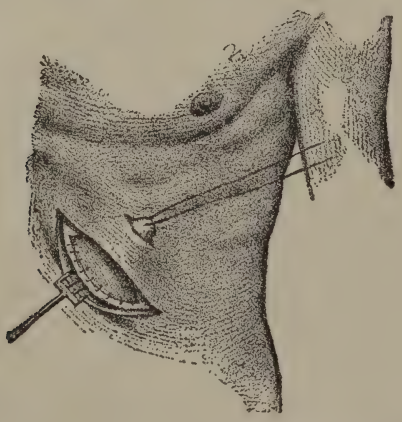


—*Wiener klinische Wochenschrift.*

smallest bougie could be introduced, and after each introduction the patient complained of considerable pain.

Taking into consideration the age of the patient, the progressive loss of flesh, and the cachexia, the case was diagnosed one of carcinoma of the esophagus.

FIG. 2.



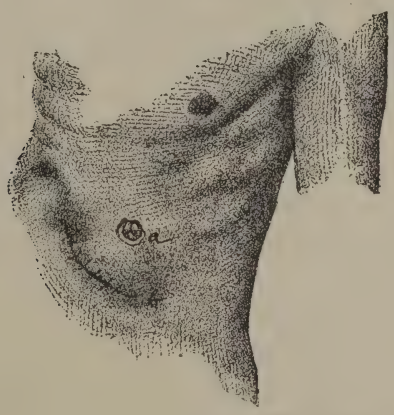
—*Wiener klinische Wochenschrift.*

Bougies were passed daily, but on account of the elasticity of the stricture it was impossible to keep the opening patulous, and an operation was decided upon.

On April 10 the patient was prepared and operated on as follows: An incision two inches in length parallel to and two finger's breadth below the left costal arch was made through the abdominal parietes. The left lobe of the liver appeared in the wound; this was pushed aside, the stomach wall seized, and a stout silk ligature passed deeply into the muscular coat, and the stomach drawn out in the shape of a cone for two and a half inches. (Fig. 1.)

Another incision about one inch in length was then made one finger's breadth above the costal arch and parallel to the first incision and the skin and fascia between these two incisions undermined. A pair of forceps were then thrust through the upper and out of the lower incision, the silk thread attached to the stomach caught, and the forceps withdrawn. By means of this thread the apex of the

FIG. 3.



—*Wiener klinische Wochenschrift.*

cone of the stomach was made to protrude through the upper wound. (Fig. 2.) The parietal layer of peritoneum was then fastened with interrupted sutures to the base of the cone, and the lower wound closed with deep sutures. (*a*, Fig. 3.) The apex of the cone was then secured to the margin of the wound above the costal arch and opened. (*b*, Fig. 3.) Fig. 4 is a diagrammatic representation of a section through the stomach at the point of operation, showing the position of the gastric fistula.

After the operation the patient suffered no shock; the temperature remained normal until the fourth day, when it reached 102$\frac{3}{5}$° F., and remained so for two days and again became normal.

He was fed by means of a catheter attached to a funnel with milk and beef bouillon for a few days; then any liquid or semisolid food

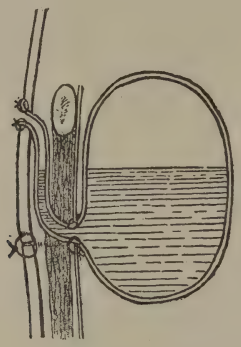
that would flow through the catheter was allowed; stimulants were given in moderation.

The lower wound should always be sealed; otherwise, stitch abscesses are apt to result from leakage of the fistula, as occurred in the case here reported, from the failure to observe this precaution. They closed, however, and the final result was satisfactory.

At the end of the fourth week he was able to sit up, and did not complain of pain or hunger.

The advantages of this method are the high position of the

FIG. 4.



—*Wiener klinische Wochenschrift.*

fistula, the level of the gastric contents reaching the top of the fistula only when the stomach is very well filled, and the tortuous canal winding around the costal arch prevents the escape of the stomach contents.

The skin covering the fistula can also be compressed in case of need.

Three months after the operation the lymphatics of the neck became involved, which resulted in an abscess. This together with the intense heat hastened the patient's death.

MEMORANDA.

REPORT OF A FOREIGN BODY IN THE LARYNX.

MANY of the acts very commonly resorted to by persons in their ordinary employment without a thought of the possible danger that may result have been the cause of a serious, if not fatal, accident. Owing to the position of the foreign body, I thought the narration of the following case might prove to be of interest to others.

Miss E., a seamstress, while engaged at her work placed a needle in her mouth for a convenient place of keeping. Attempting to join in a hearty laugh with others, over a remark made by one of her companions, she forgot the presence of the needle in her mouth and in the act of inspiration the needle was drawn into the larynx. Strong efforts were made to cause its ejection by means of coughing, retching, etc., but without accomplishing the desired result, and about an hour after the accident she came to me seeking relief. Upon making a laryngoscopic examination the needle was located and was found to be embedded in the left aryteno-epiglottidean fold, head downward, and the point of the needle in the laryngeal surface of pharynx,—likewise embedded,—thus retaining the needle in a fixed and vertical position. By aid of the mirror its removal, with a small laryngeal forceps, was finally accomplished. Upon inspection, after its removal, it was found to be one and a half inches in length, slightly bent, but intact.

W. G. WINNER, M.D.

WILMINGTON, DEL.

RUPTURE OF DIAPHRAGM, WITH PROTRUSION OF STOMACH INTO THORACIC CAVITY.

A MAN, 56 years of age, having no home, was permitted by the members of a fire company to sleep in the second story of their engine-house. Christmas (Friday) night the man repaired to the engine-house in an intoxicated condition. Retiring to the second story he in some way fell through a trap door-way to the first floor, a distance of twenty feet, sustaining a fracture of the left olecranon process and a contusion of the left side and left hip. He was brought to the

hospital where the fracture was dressed and the contusions treated. The patient complained of intense pain in his epigastrium, loss of appetite, and a great desire for water. The following Sunday, at 4 A.M., he called for a glass of water, which was given him by the nurse. After having drunk the water the patient vomited and fell back in bed dead.

An autopsy was held in the afternoon of the same day and the diaphragm was found ruptured immediately in front of the position of the apex of the heart. The stomach had entirely protruded through the opening of the diaphragm, and was so twisted on its axis as to make the lower portion of the esophagus and the beginning of the first portion of the duodenum contiguous immediately below the diaphragm in the abdominal cavity. The stomach, in its new position, had displaced the heart downward and to the right, in such a position as to lie behind the sternum. The heart was dilated and the seat of fatty change. The left lung was collapsed. The stomach was congested, and the blood-vessels were very much dilated. The patient had chronic interstitial nephritis, which was more marked in the right kidney, and hypertrophic cirrhosis of the liver. The congested stomach, fatty heart, cirrhotic liver, and interstitial nephritis were of course due in great part to the fact that the man was a chronic alcoholic. There is, to my knowledge, only one other case of this kind on record, and that was reported a few years ago by Professor W. W. Keen.

FRANK D. KILGORE.
HARRISBURG, PA.

CLINICAL DEPARTMENT.

EPISCOPAL HOSPITAL, 1896.

[Service of DR. A. A. STEVENS. Reported by CLARENCE J. GARITEE, M.D., Resident Physician.]

INSOLATION.

DURING the heated spell of August, 1896, there were admitted to the wards of the Episcopal Hospital eighty-six cases of insolation. Of this number seventy were males and sixteen females. In searching for a classification among writers on this subject one is apt to be considerably confused, since so many differ as to the exact boundary line between heat exhaustion and thermic fever. Making a broad classification of the above eighty-six cases, as into febrile and afebrile, thirty-eight would fall in the first and the remaining forty-eight in

the second class. Accepting the classification of Mr. Quain, recently used by the Weather Bureau of the United States, and in which the author advises that those cases in which simple exhaustion seems most prominent be called "syncopal;" those in which sudden and violent nervous shock makes its appearance be called "asphyxial;" and those in which the pyrexia is the most prominent feature be called "hyperpyrexial," the cases of this hospital would be divided as follows: In the "syncopal" class were forty-eight cases, thirty-six males and twelve females, all of which terminated in recovery. In the second or "asphyxial" class there were thirty-one cases, twenty-eight males and three females; these also recovered. In the last, the "hyperpyrexial" class, there were six males and one female; these cases all terminated fatally, two on admission, two four hours after admission, two twelve hours after admission, and one, the female, fourteen hours after admission. In the last two classes of cases, eleven of which are reported below, an alcoholic history was obtainable. They had not only used the stimulant in excess, but had been addicted to its use for a very long period, and most of them were out-door laborers or mill hands.

The treatment of the febrile cases consisted in the main of bathing in cold water, stimulation in many, bloodletting, in some counter-irritation was added, and in one case physostigmine was administered to control tetanic convulsions. The heat exhaustion cases were treated by the external application of heat, which speedily restored consciousness, and after this stimulants were administered in the form of whiskey, ammonium carbonate, strychnine, and digitalis.

Case I.—A carpenter, an American, while at his work on August 12, suddenly lost consciousness. On admission to hospital his temperature was 108° F.; pulse 138, full and strong; respirations 30, and pupils contracted. Treatment consisted in bleeding freely from the arm, cold bathing, and the application of a fly-blister to the back of the neck. A short time after admission automatic rhythmical movements developed in the right arm, and later extended to the legs. Forty-five minutes after the bath his temperature was 103° F., the movements still persisted, and consciousness had not returned. In fourteen hours consciousness was restored and the temperature reached the norm. For some days he complained of severe headache and weakness, but on the eighth day after admission he was discharged feeling perfectly well.

Case II.—An Italian laborer, aged 26 years, working on a railroad, and exposed to the hot sun of August 11, fell unconscious, and immediately developed violent tetanic convulsions. The latter were so severe that four men were required to hold him while he was

being brought to the hospital. On admission his temperature was 108° F.; pulse 132; respirations 28; and pupils contracted. He was plunged into cold water and bled from the arm. The convulsions ceased for a short time, but soon returned, the slightest external irritation causing marked exacerbations. Physostigmine was now administered hypodermically. Four hours later his temperature was 103° F., the convulsions still continuing but less marked. Twelve hours later convulsions had ceased, temperature was normal, and consciousness had returned. In this case the administration of physostigmine hypodermically seemed to exert a controlling influence over the convulsions, and thus to aid in his ultimate recovery.

Case III.—A laborer, aged 22 years, a native of Ireland, while at his usual work, on August 6, complained of headache and distress in the stomach; when about to stop work he fell unconscious. On admission his temperature was 106° F.; pulse 130; and respirations 30. The conjunctivæ were injected, the face flushed, the pupils contracted, and the breathing deep and noisy. The treatment consisted in bathing in water at 65° F. for thirty-five minutes, and later in stimulation with whiskey and strychnine. He returned to consciousness in three hours, and the temperature reached the normal in six hours. He was discharged in three days, feeling quite well.

Case IV.—An Irishman, aged 35 years, a boiler-maker, suddenly became unconscious while working in his shop on August 10. He had been drinking moderately the day before, and on the day of his illness had complained of epigastric distress. On admission his temperature was 107° F.; pulse 130; and respirations 28. The face was flushed, the eyes were injected, and the pupils were about normal in size. He was given a cold bath, and regained consciousness in six hours. The temperature fell slowly, reaching the norm in ten hours. On the third day he had a chill, and an examination of the blood revealed the hematozoa of malaria. He rapidly improved after the administration of quinine, and left the house on the eleventh day.

Case V.—An American, aged 47 years, a tin-roofer, with a history of a previous attack of thermic fever twelve months before, while at work on a roof suddenly developed chromatopsia and fell unconscious. On admission to hospital, on August 12, he was in deep coma. His temperature $106\frac{4}{5}$° F.; respirations 28, stertorous; pulse 134, full and strong. The conjunctivæ were inflamed, the pupils normal. He was given a cold bath, and subsequently blistered along the spine for muscular twitchings which developed after the bath. In four hours after admission temperature had reached the norm and consciousness had returned. Headache and weakness persisted for a day or two, but he was discharged on the fourth day.

Case VI.—A German, aged 48 years, a lamp-lighter, suddenly became unconscious while making his usual night rounds. On admission to the hospital, on August 9, his temperature was 108° F.; pulse 148; and respirations 50. The conjunctivæ were injected, the pupils contracted, the bowel unretentive. There were marked muscular twitchings. He was kept in water at 65° F. for thirty-five minutes. Consciousness was restored in three hours. He was discharged on the ninth day. His history was peculiar in that he had slept during the hottest part of the day and was attacked after sunset.

Case VII.—An Irishman, aged 24 years, a laborer, who had worked in the sun all day, and had taken freely of beer, fell unconscious on reaching home in the evening. His wife, believing him to be intoxicated, had him carried to bed, where he remained for an hour. His noisy breathing, however, alarming her, she had him transferred to the hospital. On admission his temperature was 112° F.; pulse 160; respirations 28. He was plunged in water at 65° F. and kept there for half an hour. As he was still unconscious, his head was placed in an ice-pack. Three hours after admission the temperature was 104° F., and the pulse was strong. Four hours later the pulse grew rapidly feeble, the legs became edematous, the temperature rose to 108° F., and in spite of the most active stimulation he died apparently from cardiac failure.

Case VIII.—An Irishman, aged 53 years, a shoemaker, who drank moderately of spirits, became suddenly ill on the afternoon of August 12, with marked frontal headache, epigastric distress, and general pains throughout body. About 9 P.M. the same evening he became unconscious, and his wife, thinking it was a syncopal attack brought on by heat, applied ice to his head during the night. When morning came she had him sent to the hospital. On admission he was unconscious, pupils were contracted, conjunctivæ were normal, pulse 140, respirations 34 and stertorous, temperature 106° F. After bleeding and immersion his temperature dropped to 99° F., and though he was still unconscious his pulse was good. He regained consciousness at the end of five hours, his circulation then being good and his temperature normal. He complained of slight headache, but excepting this felt very well during the night. The next morning at 8 A.M., about twenty-two hours after admission, the temperature rose again to 108° F. He was again bathed for thirty-five minutes, and on removal his temperature was 102° F., but the circulation not so good as before bathing. The ice which had been kept at his head during the night was continued, and stimulants were freely administered. About two hours later he became unconscious, his pulse weakened, and in spite of active stimulation he died at 10 A.M.,

twenty-four hours after admission, of heart-failure. No convulsive seizures were present in this case; in fact, until near death hyperpyrexia was the only prominent symptom.

Case IX.—A collector, who had been drinking for some time past, and who had been complaining during the day (August 11) of headache and gastric disturbance, fell unconscious on the street. On admission his temperature was 110° F.; pulse 134, full and strong; and respirations 32. His face was cyanosed, conjunctivæ suffused, and skin hot and dry. Examination of the lungs revealed signs of pulmonary edema. After taking eight ounces of blood from the arm he was placed in a bath, but had to be withdrawn on account of heart and respiratory failure. He died immediately after being conveyed to bed.

Case X.—An Irishman, aged 32 years, a laborer, a heavy drinker, while at his usual work, became unconscious. On admission to the hospital, on August 12, his temperature was 110° F.; pulse 150, full and strong; and respirations 40, noisy and stertorous. The conjunctivæ were injected, the pupils markedly contracted, and the skin hot and dry. Throughout there were severe tetanic seizures. The treatment consisted in a cold bath lasting forty-five minutes, venesection, blisters to nape of neck, and subsequently venesection. In three hours the temperature was 108° F., notwithstanding the continuous application of ice to the head and neck. Eight hours after admission the temperature had fallen to 104° F., but the pulse weakened, the face became cyanosed, pulmonary edema developed, and death resulted twelve hours after admission.

Case XI.—A German laborer, aged 45 years, who had been drinking heavily all day, suddenly became unconscious on the street. On admission to the hospital his temperature was 110° F.; pulse 135, full and bounding; respirations 28, noisy and stertorous. The lips were cyanosed, the pupils contracted, and the legs edematous. There were no convulsive seizures. One pint of blood having been taken from the arm, he was kept in a cold bath for forty-five minutes. His temperature fell to 104° F., but the cyanosis and edema increased, and death resulted twelve hours after admission.

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ALUMNI NOTES.

NECROLOGY.

THEODORE GEORGE WORMLEY, M.D., PH.D., LL.D., for nearly twenty years professor of chemistry in the Medical Department of the University of Pennsylvania, died at his home, January 3, 1897, of chronic nephritis. He delivered his lectures as usual during October, but was obliged then to discontinue them on account of ill health. On Christmas-day he rapidly grew worse, and sank steadily until the end came on the date mentioned.

Dr. Wormley was born in Wormleysburg, Cumberland County, Pa., in 1826. His ancestors were of German origin and came to America about 1753. His youth was spent in Carlisle, Pa.

He entered the Preparatory Department of Dickinson College in the autumn of 1842, remaining in attendance in that department during two years, and then entered the Freshmen Class in the autumn of 1844. He continued in regular course in the college until the end of the Sophomore year. He entered the Junior Class of the College, but, instead of taking the regular course, took special science studies as a partial student. He then took up his medical studies in Philadelphia, having pursued the required preliminary course of study under the preceptorship of Dr. John J. Myers, in Carlisle.

After having been graduated in the Philadelphia College of Medicine, in 1849, Dr. Wormley spent a short time at Carlisle, after which he went to Chillicothe, Ohio, where he began the practice of medicine. In August, 1850, he removed to Columbus, Ohio. In 1852 he was appointed professor of chemistry and the natural sciences in Capital University, Columbus, Ohio, which position he held until July, 1865. In 1854 he was appointed professor of chemistry and toxicology in Starling Medical College, Columbus, Ohio, which position he held until 1877, when, on June 5, of the latter year, he was elected to succeed Dr. Robert E. Rogers as professor of chemistry and toxicology in the Department of Medicine of the University of Pennsylvania, which position he held until the time of his decease. In addition to the professorial positions mentioned above, Dr. Wormley was, in 1867, appointed State gas-commissioner of Ohio, which

position he held for eight years, and in 1869 was appointed State chemist of the Ohio Geological Survey, which position he held until the completion of the survey in 1874. He was one of the vice-presidents of the centennial of chemistry, held in 1874 at the former home of Joseph Priestley, in Northumberland County, Pa., and in 1876 delivered the address on "American Chemical Contributions to the Medical Progress of the Century" before the International Medical Congress in Philadelphia. In 1870 the honorary degree of Doctor of Philosophy was conferred upon him by Dickinson College, and during the same year, the honorary degree of Doctor of Laws was conferred upon him by the Marietta College, Marietta, Ohio, and in 1877 the honorary degree of Doctor of Philosophy was conferred upon him by Pennsylvania College, Gettysburg, Pa.

Dr. Wormley was a member of many scientific bodies, among them being the American Chemical Society, of which, in 1879, he was one of the vice-presidents; the American Philosophical Society; the American Meteorological Society; and a corresponding member of the New York Medico-Legal Society. He was also an honorary member of the Society of the Alumni of the Department of Medicine of the University of Pennsylvania. He was a Fellow of the College of Physicians of Philadelphia, and a Fellow of the American Association for the Advancement of Science, and also a Fellow of the Chemical Society of London.

Dr. Wormley was a frequent contributor to scientific journals, writing many articles detailing the results of his scientific investigations; but his chief publication is the "Micro-Chemistry of Poisons," a large volume, which is a standard work on the subject throughout the world.

MINUTE ADOPTED AT THE STATED MEETING OF THE FACULTY OF MEDICINE HELD JANUARY 18, 1897.

THE Faculty of Medicine, at this its first meeting since the death of its late member, Professor Theodore G. Wormley, for nearly twenty years professor of chemistry and toxicology in the University of Pennsylvania, desires to place on record an expression of its sense of the great loss which it has sustained, and of its high appreciation of the character and distinguished acquirements of its deceased fellow.

Entering the service of the University at a most critical period in the history of its Medical Department, Dr. Wormley brought with him a well-earned reputation for fulness and accuracy of chemical

knowledge and for skill in imparting the same, which was of the highest value to the school of which he was destined soon to become one of its most loved and honored teachers.

For almost two decades did Dr. Wormley conduct and direct in the University of Pennsylvania the instruction in that fundamental and most important branch of medical science to which his life was devoted, and many hundreds, nay thousands, of American physicians to-day gratefully acknowledge their indebtedness to his teaching for whatever acquaintance they possess with the laws of chemistry and with their application to the healing art.

To his colleagues in the Faculty of Medicine Dr. Wormley was known as a man pre-eminent for exactness as well as breadth of knowledge, for fairness and justice in all things, and for uniform and unfailing courtesy towards every one with whom he had any relations. Loved and respected by all,—students as well as teachers,—his memory will long be treasured both for his scientific eminence and for his personal qualities; and his name will be added to that glorious roll of great men who have sustained and advanced the fame of the University from its foundation, and the record of whose lives will sustain it until Time itself shall be no more.

Minute Adopted by the Trustees of the University of Pennsylvania.

At a stated meeting of the Board of Trustees of the University of Pennsylvania, held January 5, 1897, the Provost announced the decease of Professor Theodore G. Wormley, M.D., LL.D., professor of chemistry and toxicology, and gave a brief account of his professional career. It was thereupon

Resolved, That the Trustees of the University of Pennsylvania have learned with deep regret of the death of Professor Wormley. For nearly twenty years he has conducted the courses in chemistry in the medical school, and for the period of their existence in the dental and veterinary schools. His high scientific attainments and his ability as an investigator gave him a national reputation; and his kindly disposition, his manifest sincerity, and his devotion to duty won for him the respect and affection of both colleagues and students.

To his family in their great loss the Trustees extend their sincere sympathy. Jesse Y. Burk, *Secretary.*

Dr. J. W. Sears, of the class of 1850, died of apoplexy in Birmingham, Ala., December 13, 1896, in the 67th year of his age.

University Statistics.

The following table shows the number of students in the several departments of the University of Pennsylvania, and the distribution of the officers of instruction:

Officers of Instruction.

The College	108	
Department of Philosophy	49	
Department of Law	10	
Department of Medicine (exclusive of Hospital Service)	82	
Auxiliary Department of Medicine	5	
Laboratory of Hygiene	4	
Department of Dentistry	35	
Department of Veterinary Medicine	17	
Emeritus Professors	17	
		316
Duplications		74
Total		242

Students.

The College	917	
Department of Philosophy	161	
Department of Law	358	
Department of Medicine	920	
Auxiliary Department of Medicine	48	
Laboratory of Hygiene	29	
Department of Dentistry	373	
Department of Veterinary Medicine	50	
		2856
Duplications		45
Total		2811

New York Alumni Dinner.

On Saturday evening, January 17, 1897, the anniversary of the birthday of Benjamin Franklin, the New York Society of the Alumni of the University of Pennsylvania held their annual dinner at "The Waldorf."

Among those who responded to toasts were Charles C. Harrison, Esq., Provost of the University; Rev. William Wilberforce Newton, D.D., of Pittsfield, Mass., who represented the New England Alumni Society; and John Neill, Esq., secretary of the Athletic Association of Pennsylvania.

One of the features of the occasion was the presence of a triple quartette from the University Glee Club.

Among the Alumni who were present were Dr. Thomas Dunn English, '38, author of "Ben Bolt;" C. Stuart Patterson, '60, chair-

man Indianapolis Monetary Conference; Rev. Thomas McKee Brown, '63; Benoni Lockwood, '52; Henry R. Towne, '65; Howard A. Kelly, '77, Professor of Gynecology at the Johns Hopkins Hospital, Baltimore; Professor Henry Morton, '57, president of the Stevens Institute, Hoboken; Gerrard I. Whitehead, '58; S. Mallet Prevost, '81, secretary of the Venezuelan Boundary Commission; George W. Wickersham, '79; William B. Boulton, '79; Louis C. Madeira, Jr., '72; Rev. George S. Fullerton, '79, and a number of others.

Appointments.

Dr. A. C. Abbott, professor of hygiene in the University of Pennsylvania, has been appointed chief of the bacteriological division of the Bureau of Health of Philadelphia.

Dr. Gwilym G. Davis has been elected a visiting surgeon to the Episcopal Hospital, Philadelphia.

Dr. T. S. K. Morton has been elected surgeon in the Orthopedic Dispensary of the Pennsylvania Hospital.

The Treatment of Piles and Pruritus Ani with Collodion.

Dr. D. W. Samways says he has found that the itching in cases of pruritus ani disappears at once on the application of simple collodion. After a few moments of somewhat intense smarting (which can be prevented by cocaine, if necessary), no further itching is felt ordinarily for twelve or twenty-four hours, if at all. He supposes the ether or alcohol in which the gun-cotton is dissolved stops the irritation, and the collodion film, by protecting from the air, prevents its reappearance. In cases of external piles he has observed that the application stimulates the pile to contract; that the hardening film of collodion supports the pile thus contracted, and that the contracting collodion (not collodium flexile) further reduces it. It is the principle of the elastic stocking applied to the hemorrhoidal instead of the saphenous veins, he says, and with a like result. The collodion is best applied by dropping it on a few fibres of cotton wool, which are spread over the pile each morning after defecation.—*New York Medical Journal.*

EDITORIAL.

SKIAGRAPHY IN MEDICINE AND SURGERY.

Although but a few months have elapsed since Professor Röntgen announced his discovery, there are probably very few physicians in the civilized world who are not familiar with the wonderful property of the X-ray which enables it to penetrate certain substances that are impermeable to ordinary light, and who have not seen reproductions of skiagraphs of various portions of the human body. The marvellous activity of the "press" is one of the distinctive features of the present time. The moment a new discovery in science is hinted at the fact is flashed to all parts of the globe by the telegraph, and there are usually a number who at once set to work to ascertain the value of the announcement.

So many "new discoveries" are found to be worthless that the greater proportion of people not unnaturally doubt the early reports of the first observers. Röntgen's discovery stands out prominently as a notable exception. Not only has the first statement of his observations been fully confirmed, but the application of the process has been greatly extended, and it is doubtful if we have yet conceived of the ultimate possibilities of this new photography. It was fortunate that the subject was susceptible of positive demonstration so that a single exhibition was sufficient to remove every doubt from the most sceptical.

No one will deny the value of the contribution photography has made to medicine. Skiagraphy is to the study of certain of the concealed parts of the body what photography is to the study of its surface. Nay, it is much more, for while the photograph records only what the eye sees, the X-ray is able to reveal what has heretofore remained hidden, and to record it indelibly on the photographer's plate.

The principle which underlies Röntgen's discovery is that this peculiar ray generated from a Crookes's tube, and called X-ray because its true nature was and still is undetermined, is able to penetrate many substances which hitherto have been considered opaque and to affect a sensitized plate as does sunlight, although to a less degree. Certain substances are more easily penetrated by these rays than others. Of the normal tissues of the body, for example, bone offers the greatest resistance. The result, therefore, is, when the X-rays are passed through the body and allowed to fall on a sen-

sitized plate that the bones cast deep shadows while the soft parts are manifested by pale shadows. The same is true of the fluoroscopic picture. The shadows of the bones are plainly visible because bone, as it were, absorbs the X-rays. Bone is not entirely impenetrable to these rays, as will be seen by comparing skiagraphs of the skeleton with those of other materials. The thickness of a substance also affects the depth of the shadow as does its density. For this reason, in a good skiagraph of a portion of the body, the outlines of most of the structures are apparent by the variation in the depth of the shadows of the various parts.

We cannot agree with those who consider the introduction of this innovation in medicine a misfortune on the ground that it will lessen the necessity for minute examination and keen perception, and thus lead to a deterioration of skill in the next generation. A Röntgen plant is as truly an instrument of precision as is the clinical thermometer, the stethoscope, and the microscope. It may be that the physician of fifty years ago had a keener intuition than his brother of to-day. The former measured fever by the pulse and a few uncertain external signs, and in these observations his skill has largely become a lost art. But who would wish to return to that time. Even if instruments of precision have robbed physicians of a certain skill in a few directions, can any one deny that the results obtained are vastly better than in the past? Is not this the final test upon which we should base our judgment? The goal for which we should ever strive is "precision in medicine." As this can scarcely be attained by the human senses, let us welcome every instrument that gives us aid in this direction.

Turning now to the practical side of this subject, we find it has a large field of usefulness in almost every department. We may recall the contribution on "Skiagraphy in the Diagnosis of Aortic Aneurism" in the last issue of the MAGAZINE as an illustration of one of its uses in medicine proper. Equally valuable is the information gained in regard to the size and position of the heart and liver, and to a less degree of the abdominal viscera in general.

Skiagraphy has come to the aid of the ophthalmologist and laryngologist in locating foreign bodies. Surgery has, however, profited most by the Röntgen apparatus.

The Department of Clinical Surgery of the University possesses a plant of the latest and most approved pattern, which is installed in the University Hospital. It has been a source of great satisfaction to Dr. White in teaching and of otherwise unattainable instruction to the students. A large number of foreign bodies have been located by this means and removed before the class. Of much greater in-

terest are the cases of fractures and dislocations that are brought before the ward classes, because, having elicited all the signs of the injury, it is possible to demonstrate to the class the exact condition, thus confirming the diagnosis or showing, it may be in some cases, an unsuspected injury and calling for another examination In the vast majority of uncomplicated cases the skiagraph simply confirms the result of the previous examination, but even this is no small gratification. With all the skill one could possibly attain in a lifetime it might still be impossible to determine exactly what had happened beneath the skin as the result of an accident. The most unexpected injuries occur, and this is particularly true of those in the neighborhood of joints where fractures and luxations of every possible variety are apt to be associated. Skiagraphy is now an indispensable part of our course on clinical surgery.

Much care is required in the interpretation of the skiagraph in certain cases. In fact, the difficulty in some instances of appreciating the exact injury from a study of the picture is very great. This point is being thoroughly studied, however, and every effort is made to perfect the process as far as possible both for the benefit of the service and the instruction of the students.

THE OUT-DOOR VISITING DEPARTMENT OF THE HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

We desire to call attention to this department of the University Hospital, which is, perhaps, but little known. It was established some two years ago as an extension of the work of the Out-Patient Department.

It provides for the visiting of deserving poor patients, within certain districts, a list of which is published on another page, at their homes. As soon as the patients are able they are expected to attend the dispensary for further treatment.

This department not only extends the usefulness of the hospital, but it has been the means by which a number of interesting cases have been secured for clinical instruction,—an important matter at the present time on account of the very large classes in attendance at the University.

It will be observed (see page 375) that eleven of the districts, eight of which have just been created, are without physicians. Applications for these positions should be made to Dr. James Tyson, 1506 Spruce Street. It is necessary that the physician should reside in his district.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

Bianchi's Phonendoscope.

Schwalbe (*Deutsche medicinische Wochenschrift*, No. 31, 1896) describes the new instrument invented by Bianchi and Bozzi and called the phonendoscope. It consists of a resonator and two conducting tubes of soft rubber similar to those of the ordinary binaural stethoscope. By its use one can appreciate all the normal and pathologic sounds of the body. Sounds that are ordinarily not audible are rendered readily appreciable. One is supposed to hear the respiratory murmur, the pitch, and other characteristics of the sounds of the circulatory apparatus, of the organs of digestion, of the ear, both in health and in disease; further sounds of the muscles, joints, and bones (fractures); of the pregnant uterus, fetal heart, and even the capillary circulation. By employing two instruments and using a tube from either "comparative auscultation" may be practised. It may be used to determine the form, position, thickness, and relations of various viscera. To do this one attaches a staff with a button at its distal end. This is placed over the organ to be outlined, and, by a series of gentle strokings with the finger, vibrations, readily appreciable, are produced which vary in intensity and character with the region examined. Percussion is thus replaced. The boundaries of organs are thus recognized, the individual lobes of the lungs can be outlined, the parts of the lobes overlying each other determined, as also the distinction between auricles and ventricles, etc. As numerous tubes can be attached to it, the instrument is serviceable for teaching purposes, and is warmly recommended.

Baruch (*New York Medical Record*, October 31, 1896) also describes and recommends the instrument, mentioning how in cases of myocarditis, when the heart-sounds could not be distinguished with the stethoscope, they have been distinctly heard with the phonendoscope, and this through several thicknesses of clothing. Faint murmurs are distinctly audible; fine crepitant râles can be heard through the clothing, and the patient be examined without disrobing. As the instrument intensifies the sounds it will prove of great value to those with impaired hearing.

Egger (*Münchener medicinische Wochenschrift*, No. 45, 1896) is of the opinion that the disadvantages of the phonendoscope far outweigh its advantages. He finds that sounds are heard at quite a distance from their seat of production and, being much intensified, give rise to annoying admixtures. Vesicular breathing is heard relatively well, but bronchial breathing variously. Deep bronchial breathing is well heard, but variations such as amphoric breathing are very poorly trans-

mitted. In general, low tones are well heard, higher ones, especially those of a metallic nature, very poorly. He is very sceptical regarding the possibility of distinguishing the lobes of the lung and the auricles and ventricles of the heart. For teaching classes it is of service, but for individual use the single stethoscope or the unaided ear is to be preferred.

The Diagnosis of Pericardial Effusion.

Ewart (*British Medical Journal*, March 21, 1896), intentionally directing but slight attention to various and valuable signs (friction sounds and fremitus) or symptoms (pain, alterations of respiration, position in bed, etc.) of pericardial effusion, describes other procedures of great value in making an accurate diagnosis. These are (1) accurate percussion and palpation, (2) careful auscultation, and (3) observation of the pulse. The normal area of the deep cardiac dulness is carefully described, attention being directed to the fact that the lower end of the right limit of the total dulness does not drop vertically on the hepatic line, but curves gently inward, due especially to the shape of the right auricle. The left lower angle of this dulness is also rounded off, although corresponding to the angular projection of the apex-beat. The signs of pericardial effusion are arranged numerically: (1) Considerable extension of the lateral boundaries of the total area of dulness. (2) Great extension of the absolute dulness; the sternum absolutely dull. (3) The depression of the liver. (4) Dr. Rotch's sign; dulness in the right fifth intercartilaginous space. (5) The right lower angle of the pericardial dulness extends to the right (outward), and is not curved inward towards the sternum as is the normal cardiac dulness,—an important point in differentiating between enlargement of the heart and pericardial effusion. (6) The left lower limit of the pericardial dulness extends outward to the left, and is not rounded off as is the normal cardiac outline. The apex can be felt or, at least, heard beating somewhat inside and above the boundaries of the pericardial dulness; but the apex is never as much elevated as has been popularly supposed, and for this there exist good anatomical reasons. (7) The first rib sign. In all cases of considerable pericardial effusion, it was possible to feel with the finger the upper edge of the first rib as far as its sternal attachment. This points to a raising of the clavicle, and a relaxation of the ligament between it and the first rib. (8) The posterior pericardial patch of dulness, an area of dulness at the left inner base, extending from the spine for varying distances outward, and ceasing abruptly; commonly it does not extend higher than the ninth or tenth rib, and here ends abruptly. (9) An area of tubular breathing below the right mamma. (10) A patch of tubular breathing and egophony to the left of the tip of the left scapula. (11) Secondary pleural effusions, frequently beginning in the right pleura, but ultimately occurring in both. (12) A large and slapping pulse, not unlike the Corrigan pulse. These signs may be modified by deviations from the typical normal cases.

Latent and Transient Pericardial Effusion.

Ewart (*Lancet*, November 21, 1896), referring to the fact that pleural effusions may develop by degrees without pain or initial severity of symptoms, finds justification for the supposition that pericarditis may develop in the same way, in the agglutinations, bands of adhesions, the thickenings, and the fibrous deposits found after death in the pericardium of those in whose history there is no record of pericarditis. He believes that pericarditis is less infrequent than is sometimes thought, and that it may originate, run through a short course, and disappear entirely unsus-

pected. He reports three cases ((1) nephritis; (2) valvular disease; (3) acute rheumatism). In all there developed a pericardial effusion which came on without manifest symptoms and, persisting a few days, disappeared. The diagnosis was possible only by a very careful examination, particular attention being directed to percussion, and the taking of tracings. The alteration in the outline of the normal cardiac dulness at the anterior base of the thorax is dwelt upon. The liability of overlooking these effusions is much increased by the comparative rapidity of their reabsorption. He concludes: (1) Effusions may occur in the pericardium independently of acute pericarditis, under the influence of rheumatism, of cardiac affections, of Bright's disease, etc. (2) If of moderate size they may be capable of rapid reabsorption; and in that case, not attracting attention either by the painful symptoms of pericarditis or the pressure symptoms of fluid, they may often run their course unobserved. (3) As in the case of the analogous pleural effusions, they may be dependent upon a subacute inflammatory process. More often they are probably passive or mechanically induced. (4) Rest and diet and the administration of cathartics, of diaphoretics, and diuretics are the only treatment needed in the average case. In the severe cases, which are usually those of advanced kidney-disease, the effusion as it steadily increases becomes obvious, and paracentesis may be necessary. (5) The most important practical conclusion is that our physical examination should be accurate and searching, and that in all cases of enlarged precordial dulness the simple tests for the presence of pericardial fluid which have been described should be thoroughly applied.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

Dermatitis caused by Röntgen Rays.

Henry C. Drury (*British Medical Journal*, November 7, 1896) reports the case of a man, aged 35 years, on whom an attempt was made to get a Röntgen photograph of the renal region. The exposure lasted one hour.

Three hours later he felt nausea, which, however, passed off. Six days later another attempt was made, this time the exposure being with a somewhat stronger battery for an hour and a half. After the patient left the laboratory he again felt nauseated, and had to take some brandy before reaching home. Next day the abdomen was slightly red, there was no itching or pain. On the third day redness was more intense. On the fourth day vesicles appeared; these increased in size and number, ran together, broke, and formed eighteen days after the second exposure a patch seven and a half by eight and a quarter inches. It looked like an irritative eczema, with exfoliated epidermis and a profuse sero-purulent discharge. Sixteen weeks after the second exposure the sore was three by three and a half inches and covered with a thick leathery insensitive false membrane. The patient improved somewhat later, but at date of writing was still unwell.

Operative Interference in Typhoidal Perforation.

Armstrong (*British Medical Journal*, December 5, 1896), after reviewing the subject of perforation from typhoid fever, reports a case on which he operated. The operation had been done in the hospital six times without a recovery, three times by the author and thrice by his colleagues. In the present case twenty days have now elapsed since the operation, and recovery apparently is assured. The perforation occurred on the thirteenth day, and operation was done eighteen hours after the occurrence of sudden abdominal pain, tenderness, and vomiting. The perforation was readily found six inches above the ileo-cecal valve. A quantity of fetid brownish fluid and pus and gas filled the pelvis and lower abdominal zone. The perforated ileum had formed no adhesions to neighboring coils, nor to the parietes, but the opening was partially closed by a corner of omentum, which was attached around the perforation.

The Application of the New Photography to Medicine and Surgery.

Sydney Rowland (*British Medical Journal*, December 5, 1896) gives some practical points in working Röntgen ray apparatus. He is convinced that the best results are to be obtained by using a tube with a comparatively low vacuum; lately he has not used more than a four-inch spark length. He proceeds as follows: Connect the tube to the coil in the usual manner, and arrange the discharging-rods so that a distance of about three inches exist between them. If the coil be then started, in the majority of cases sparks will pass across the terminals and the tube remain inactive. The tube must now be heated by a flame until the sparks just cease to pass and the characteristic green fluorescence is obtained. If the terminals be now separated somewhat, the tube is in the best condition for use. As a general rule, the larger the coil the better will be the results. This is not owing to the fact that a larger coil will give a longer spark, but to the fact that with a large coil one can get a certain length of spark with a more rapid make and break than with a small coil. Sufficient spark-length is necessary to break through the vacuum; any power the coil may possess beyond this is far better employed in increased frequency of vibration. The use of a Tesla current in practical work is not convenient.

The Röntgen rays produce some very curious effects on the skin, some of which the author has seen. A case is quoted from *Nature*, in which there was exfoliation of the skin and nails of the hands with a foul-smelling discharge.

Amputation of the Foot with a Dorsal Flap.

Cumston (*Annals of Surgery*, December, 1896) advocates amputation of the foot with section of the tibia and fibula just above the articular surface, and the use of a dorsal flap, when a plantar flap cannot be secured. Advanced age of a patient in poor health is a contra-indication. The operation is described as follows:

The incision should begin near the tendo-Achillis, below and behind one of the malleoli, according to the foot operated on. It follows the line dividing the plantar and dorsal aspects, the point of the knife being kept close to the bony structures, and rounding off in the shape of a gaiter over the interdigital groove of the toes.

The second step is the dissection of the flap. This should include the entire

thickness of the soft parts of the dorsum of the foot, especial care being taken not to injure the tarsal artery. The dissection should be kept close to the bones up to the tibio-tarsal articulation, care being taken not to lacerate the tissues.

The third step is the opening of the tibio-tarsal articulation and disarticulation of the foot. The flap being turned back on the dorsum of the foot, the articulation is opened according to the rules of all amputations of the foot. Section of the soft parts at the back of the foot is completed, if necessary. The tendo-Achillis is then detached from its insertion to the calcaneum.

Fourth step. Section of the malleoli and toilet of the field of operation. The malleoli are detached with the saw just above the articulation of the tibia, so as to have an even surface. As to the nerves, they are resected, as in any amputation, and the many tendons trimmed off. The tendo-Achillis is sutured to the extensors of the toes, and hemostasis is then attended to. The flap is then sutured and a drain placed in both the internal and external angle of the incision. The cicatrix is found on the posterior aspect of the stump, and the latter bears pressure. A boot may be worn three months after the operation.

Amputation of a Carcinomatous Breast during Labor.

J. Ives Edgerton (*New York Medical Journal*, November 14, 1896) reports a case, occurring in the service of S. W. Lambert, of a pregnant woman with a hard carcinomatous mass in the right breast, which was removed just after labor had begun. The object was to obviate the increased growth which is apt to take place in these cases during the puerperium. Labor had just begun when the operation was performed, and it resumed its course when the effects of the anesthetic had passed off. The second stage of labor started at the end of six hours from the time of operation. As the patient was weak, two hours later axis-traction forceps were applied, and the child easily delivered in eight minutes. Patient was out of bed on the twelfth day. Dr. Edgerton subsequently removed the axillary glands, the patient doing well.

The Value of the Sacral Method of Operation in Diseases of the Rectum and other Pelvic Organs.

John Campbell (*British Medical Journal*, October 10, 1896) gives the following indications for this operation: In cancer of the rectum it possesses these advantages: (1) It insures the recognition of the limits of the disease and enables us to get as far as possible beyond them. (2) It renders the complete control of hemorrhage comparatively easy. (3) It affords access to the tissues between the rectum and the sacrum, and gives facilities for clearing away infiltrated glands and lymphatic vessels. (4) It leaves the sphincter and levator ani muscles uninjured in the majority of cases, and allows the patient to have considerable control over the action of the bowels. Its chief drawback is its apparent severity. The sacral method may be regarded as the best method of extirpating a large number of rectal cancers.

In cancer of the uterus the method is recommended when the uterus is too large or the vagina too small for vaginal hysterectomy. For fibromyomata of the uterus it can only be of use in a very limited number of cases, such as (1) small tumors springing from the back of the uterus and firmly adherent to the sacral hollow; (2) small tumors growing from the side of the cervix and burrowing into the broad ligament and beneath the parietal peritoneum. Removal of the uterine appendages is better done through the abdominal wall.

Method of Operation.—A curved incision from the right sacro-iliac synchondrosis to the left ischio-rectal fossa gives most freedom. The coccyx and, if necessary, the sacrum as high as the third foramen may be removed. There seems to be no use in replacing the bones. In rectal cases the sphincter and levator ani muscles should be spared if possible, and the ends of the bowel united to one another in front at least. When the ends cannot be united easily it seems best to lay the anus open by a posterior median incision. The ends of the sphincter thus unite with the scar tissue of the sacral wound, and the new anal aperture is in part surrounded by muscular fibres and sometimes under the patient's control. Close and elaborate stitching gives no permanent advantage, and should be avoided, only as many sutures as are needed to control bleeding and keep the bowel in place being used.

A Case of Gastrostomy performed according to Kader's Method.

Willy Meyer (*New York Medical Journal*, November 7, 1896) records a case of gastrostomy on which he operated by Kader's method (*Centralblatt für Chirurgie*, No. 28, July 11, 1896). The operation is as follows: An incision, three to four inches long, is made, penetrating skin and fascia, parallel with the border of the left ribs and one and a half to two fingers' breadth from the same. The simpler vertical incision can also be used. A blunt division of the left rectus muscle is made for a distance of about two and a half to three inches. The posterior sheath of the rectus muscle and the peritoneum are incised. A small fold of the stomach is pulled forward in the usual way, with the help of the fingers or the forceps or of two slings of silk through the serous and muscular coats, the wound meanwhile being held back by blunt retractors. Then a small incision is primarily made between the two slings, and a drainage-tube about the size of a pencil introduced into the stomach for a distance of about two and a half inches. The few spurting arteries of the gastric wall are, as usually done, ligated with fine silk (or catgut). The drainage-tube is at once fastened to the side of the stomach wound by a catgut stitch. Then two Lembert sutures are put in on each side of the tube in such a way that they catch and unite a portion of the surface of the stomach of about half an inch in width, leaving between them a groove of three-quarters of an inch in width. By tying these sutures two longitudinal folds are formed, which turn inward the wall of the stomach in the immediate neighborhood of the tube, and thus surround the latter in the shape of a narrow funnel. Thus the tube lies in a canal lined by serous membrane. To lengthen this canal two more folds are stitched up in the same way on top of the first ones. These sutures are not to be cut off but left long. The entire area of the stomach is then stitched to the peritoneum and posterior sheath of the rectus. The bluntly-divided rectus muscle is next to be drawn together with the help of a few stitches, the anterior sheath of the rectus sutured, and the skin closed by stitches. If desired, feeding through the tube may be begun at once. The result of the operation in the author's case was all that could be desired.

Operation for Cicatricial Deformity by Croft's Method.

C. Yelverton Pearson (*British Medical Journal*, October 24, 1896) gives the case of a boy, aged 4½ years, whose upper thigh was united to the abdominal wall by a cicatrix resulting from a burn. The operation done was as follows: An oblique strap of skin, five inches long by two inches wide, including the subcutaneous tissues down to the aponeurosis, was raised from the healthy skin above

the umbilicus and freed except at its two extremities. The adjacent cut margins of skin were raised for a short distance, approximated as far as possible without too much tension, and fixed to the abdominal aponeurosis beneath the strap. A piece of oiled silk dipped in carbolized oil was inserted beneath the skin flap and an antiseptic dressing applied. Three weeks later the scar tissues uniting the thigh and abdomen were completely divided until sound tissues were reached.

The thigh was fully extended, which required considerable force. A larger raw surface was exposed than could be covered by the flap. The inner or left extremity of the flap was then divided, hemorrhage arrested, and the free end of the flap sutured to the skin at the inner part of the groin-fold. To relieve tension the thigh was kept flexed. In ten or twelve days the other end of the flap was divided, brought down, and fixed to a point a little below and internal to the anterior superior spine. The limb was now brought fairly straight. A few weeks later the margins of the flap were raised, spread out as far as possible, and fixed by sutures. The results in the case were perfectly satisfactory. The method is necessarily tedious, and requires considerable patience on the part of both the patient and surgeon.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Strontium Lactate in Bright's Disease.

Bronowski (*Wiener medicinische Presse*, September, 1896, and *British Medical Journal*) makes a preliminary statement of the results of his clinical and experimental investigations into the action of lactate of strontium upon the kidneys. His first experiments were upon rabbits, and consisted in the daily subcutaneous injection of a quantity equal to double the dose proportionate to the body-weight. After a month one rabbit had gained seven ounces in weight, and the second ten ounces, while the third had not altered. They were perfectly well in every way, and after they had been killed the internal organs were found to be normal. The drug was then tried in ten cases of kidney-disease, three of which were acute parenchymatous nephritis, six mixed nephritis, and one interstitial nephritis. Six doses of fifteen grains were given daily, and well borne. In all cases the volume of the urine increased, and its specific gravity fell. This effect began on the second or third day, and was most marked on the sixth or seventh, and persisted two or three days after the drug had been discontinued. The action was most marked in acute cases, and was much slighter in the chronic forms; the albumin diminished *pari passu* with the increase in the urine. In acute cases it disappeared entirely, but in chronic no diminution was observed. The ethereal sulphates in the urine, by which the amount of intestinal putrefaction may be estimated, were unaffected, nor was there any constant change in the pulse or blood-pressure. The antiseptic properties of the lactate of strontium were tested upon a patient with an intestinal fistula in the cecal region, and found to be extremely slight. A further series of experiments was made upon dogs, varying strengths of a solution of the drug being injected

intravenously. The blood-pressure was at first unaltered, but fell rapidly when the dose was increased; the rapidity of the pulse and respiration was increased, and the volume of urine was doubled or trebled. With enormous doses the volume again diminished, and the urine was found to contain red and white corpuscles. In this case there was seen *post mortem* (the animal having been killed by bleeding) hyperemia of the kidneys and hemorrhages into their capsule and parenchyma. The author concludes that strontium lactate is a pure diuretic, and is more valuable than any other remedy in the treatment of acute inflammatory conditions of the kidney.

The Management of Pneumonia.

In a discussion upon the above subject at a recent meeting of the New York Academy of Medicine (*American Medico-Surgical Bulletin*, December 19, 1896), Dr. Folsom, of Boston, said that while the death-rate from typhoid fever had been diminishing, the mortality of pneumonia had been ever on the increase. He felt convinced that pneumonia should be treated by boards of health and by the medical profession as an infectious disease. He had used the cold bath in thirty-six pneumonia cases in the Boston City Hospital. The baths were given very much as in typhoid fever, although they were not kept up so long, the duration generally being about ten minutes. Of the thirty-six cases, twenty-eight recovered and eight died, giving a mortality of 22.2 per cent. In the same hospital there had been treated 355 cases of croupous pneumonia, with a mortality of 34.9 per cent., and this was about the average death-rate at that hospital. Of his eight fatal cases, one had typhoid fever also, one had pleurisy, three had chronic alcoholism, one had general diplococcus infection (endocarditis, pericarditis, and meningitis), one had chronic nephritis, and one had phthisis. Excluding the case of phthisis, dying on the thirty-first day, and the case of chronic nephritis, dying on the second day, in both of which there was only an intercurrent pneumonia, which simply hastened death, the total number of cases was thirty-four, and the mortality was 17.6 per cent. From close observation of these cases it had seemed to him that the cold bath treatment offered better chances of recovery, even in desperate cases. In all but one of these cases he had been compelled to use alcoholic stimulants on account of the severity of the symptoms. In every instance it was found that the bath was grateful to the patient, which was in marked contrast to his experience in typhoid fever. In a considerable number of cases no medicines were used except laxatives. He knew of no therapeutic agent which gave so much comfort to the patient as the moderately cool bath; it moderated the fever, lessened the cough, diminished restlessness and delirium, and induced sleep.

Inhalations of Oil of Cinnamon in the Treatment of Consumption.

J. Hilton Thompson (*British Medical Journal*, November 7, 1896) reports five cases of phthisis in whom considerable improvement was effected through the use of oleum cinnamomi ver.

His conclusions are as follows: That oil of cinnamon, when used as an inhalation in certain stages of consumption, affects injuriously tubercle bacilli, is, I think, rendered probable by the very remarkable way in which, in the above cases, the organism diminished in numbers or disappeared from the sputum in a comparatively short time after commencing treatment; also by the tendency of the disease to relapse when inhalation was discontinued. It appears probable that the oil of cinnamon tends to cure consumption in two ways: First, in the very early cases of

catarrhal phthisis, by so directly affecting the bacilli as to stop their growth; and, secondly, in cases that are rather further advanced, by only allowing organisms incapable of growth to pass along the bronchi, and thus prevent the infection of fresh lobules. Besides the five cases reported, the drug was tried in the more advanced stages of the disease, but, as might be expected, without any benefit. The symptoms subsided in the following order: The expectoration and cough were the first to improve, then the temperature tended to normal, and finally the weight began to increase. The drug may be administered from an ordinary inhaler. Continued inhalation of the vapor caused no irritation of the buccal cavity or of the air-passages, and no untoward constitutional effects were noted.

Sodium Tellurate in Night-Sweats.

Joquet (*Journal de Médecine*, August 10, 1896) has successfully employed sodium tellurate in the exhausting sweats of phthisis. The drug is given in either pill or in solution, the sodium salt being readily soluble in both water and alcohol. Three-tenths of a grain daily is recommended as an initial dose. In severe cases, however, as much as three-fourths of a grain may be taken daily; beyond this amount digestive disturbance is apt to be excited. For a lasting effect the drug should be administered for about three days.

The External Application of Pilocarpine in the Treatment of Nephritis.

Julia (*Lyon Médical*, December 6, 1896) reviews the treatment of nephritis by the external application of pilocarpine, introduced by Mollière in 1894. This treatment consists in rubbing into the dorso-lumbar region, every morning, an ointment, composed of three ounces of vaseline and from three-fourths of a grain to one and a half grains of pilocarpine nitrate. The surface is subsequently covered with a layer of cotton, which is allowed to remain on during the day. Eighty patients were subjected to this treatment; some of these had acute nephritis from cold, some infectious nephritis, and others chronic nephritis. The acute cases were rapidly restored to health, and the chronic cases were generally much improved. Albumin often disappeared from the urine entirely during the treatment. The inunctions were invariably followed by marked diaphoresis and diuresis.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

Albuminuria in Pregnant and Puerperal Women.

Dr. Eklund, of Stockholm (*Edinburgh Medical Journal*, December, 1896), believes that midwives' hand-books should call attention to the necessity for examining the urine of every pregnant woman. If the urine be found to contain albumin,

the midwife should be competent to order hot baths, flannel underwear, rest in the recumbent posture, mild diuretics and laxatives, beef-tea with parsley, seltzer water with boiling milk, milk food, boiled fruit, weak coffee, tea, and chocolate, compound liquorice powder, etc. If this hygienic treatment does not within a certain time, say a month, cause a disappearance of the albumin, a physician should be called. It is a matter of great importance that the pregnant woman should learn to procure for herself daily evacuations of the bowels, especially towards the end of pregnancy and in beginning labor. For this purpose dietetic means should be employed chiefly, but in case of failure mild aperients should be used, such as cascara, senna, frangula, compound liquorice powder, and enemata of salt and water. Of the very greatest importance during pregnancy, and especially during the puerperal state, is the care of the kidneys, the avoidance of all that would tend to increase the functional activity of these organs, the maintenance of equilibrium, and the proper division of labor between the skin, digestive apparatus, and the kidneys. If any organ can bear a greater exercise of function it is the skin, and next in order of tolerance the intestinal tract; the lungs are far more sensitive, but the kidneys most of all. No puerperal woman should be permitted to leave her bed until her urine is free from albumin, if possible.

Eclampsia and the Milk Treatment.

Ferré (*L'Obstétrique*, November 15, 1896) regards the milk treatment to be most efficient from a prophylactic point of view in the treatment of puerperal convulsions, although it does not necessarily cause the other alarming symptoms besides the convulsions to disappear. He has never seen convulsions in a patient subjected for over a week to milk diet, nor any other trouble of a toxic origin. The alleged disappearance of albuminuria, on the other hand, does not necessarily occur. Ferré speaks with equal decision on this point, declaring that he has never seen so much as an appreciable diminution of albumin even after prolonged milk diet. The same is the fact with the edema. The above facts are emphasized because he is aware how some obstetricians have very naturally given up milk diet on account of persistence of albuminuria and edema. Such a step is a mistake, for if the treatment be continued labor will proceed without any convulsions coming on, though the legs remain swollen and the urine albuminous.

Postpartum Hemorrhage.

M. Tarnier (*La Semaine Médicale*, April 11, 1896), at a recent meeting of the Société Obstétricale de France, stated that the treatment of postpartum hemorrhage was largely diversified and depended upon an accurate diagnosis. All hemorrhages after labor are not of the same origin, but may be classified under two heads: (*a*) hemorrhages from the cervix or vagina; (*b*) hemorrhages from the uterus itself. Treatment differs in the two classes of cases. In the former, the diagnosis being made and the vaginal tear recognized, it is seen that the uterus is small, hard, and retracted, and there is no necessity to bring about its contraction. Local compression at the point of injury for a certain period will suffice to arrest the hemorrhage. Sometimes it is not possible, on account of the presence of considerable quantities of blood, to find the bleeding spot in the vaginal fundus, and it is then best to tampon the vagina as carefully as possible.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

Indications in Fibroid Tumors of the Uterus.

Kessler (*St. Petersburger medicinische Wochenschrift*, No. 19, 1896) says only a short time has elapsed since it was considered advisable to operate upon only a small percentage of the cases of fibroid tumor of the uterus, but that now, on the contrary, one goes so far as to question whether it is not advisable to operate in every instance. It was believed that fibroid tumors, not like carcinoma and sarcoma, were always benign growths, and, therefore, they were only treated for the hemorrhage, and when this was not present it was thought best to wait for the menopause with the hope that the patient would then be cured. By degrees we have come to know these tumors better. There are a number of instances where the malignancy of fibroid tumors approaches the severity of carcinoma:

(1) It has been determined that the menopause does not always result in a favorable influence, but often the tumor first begins to grow after the menopause.

(2) Through continued irritation circumscribed peritonitis is easily developed, and strong and very vascular adhesions are formed.

(3) The hemorrhage results in an undermining of the constitution, particularly fatty degeneration of the heart muscle, "the fibroid tumor heart."

(4) Frequently gangrene or sloughing of the tumor occurs.

(5) Now and then they become tangeëctatic and cystic degenerated; also more rarely torsion occurs.

(6) A fibroid tumor easily degenerates into a sarcoma.

(7) Finally, local compression of neighboring organs occurs.

The mortality statistics of the operation for fibroid tumors have become extraordinarily favorable, and one can now definitely speak of the degree of danger. Kessler believes that all fibroid tumors should be removed as soon as they cause symptoms, at least as soon as the symptoms have a tendency to increase, are pronounced, or progressive.

Carcinoma of the Fallopian Tube.

Hennig (*Centralblatt für Gynäkologie*, No. 47, 1896), in a paper read before the Obstetrical Society of Leipzig, April 20, 1896, on this subject, considers the difficulty of diagnosis due to the very great infrequency of the disease. Where gonorrheal affections are excluded, the diseases to be thought of are sacculated growths, tuberculosis, carcinoma, or abnormal pregnancies. The diagnosis of carcinoma is made more easy than others in that a fluid (increasing in amount) is encapsulated by a ridged wall; sometimes also there is a vaginal discharge of bloody water or cloudy mucus.

The statistics regarding its frequency widely differ. Wagner states that in northern Germany 5 per cent. of uterine carcinoma are associated with carcinoma

of the tube, while Kiwisch, in southern Germany, found the tube carcinomatous twenty-five times with 100 uterine carcinomas. It very rarely occurs with carcinoma of the cervix, is more frequent with ovarian carcinoma, and most frequent with carcinoma of the uterine body. Primary tubal carcinoma may infect either the uterus or peritoneum. Primary tubal carcinoma is most frequently bilateral. Eighteen cases have been reported. Sarcoma of the tube is excessively rare, only four cases. The form of carcinoma according to Sänger is always medullary; sometimes infiltrating, sometimes villous. The climacteria and catarrhal inflammation are predisposing causes (Sänger). The character of growth is either progressive thickening with increased consistency, at least in the beginning; soft nodules or irregular nodules, of medium consistency, growing to the side or even behind the uterus. The diagnosis *per vaginam* must be made by exclusion, rectal and bimanual examination under ether. Cachexia is not present, at least not early. The presence of ascites, disease of neighboring organs, stomachic, urinary, and rectal symptoms are important. When the growth breaks through into the peritoneal cavity marked symptoms result. The appearance of the posterior wall of the bladder is often important. In six cases the diseased organ has been removed and the patient provisionally restored. In four cases the disease returned, in Thorton's case after three years. Doran advises the removal of uterus and both tubes. Four died either during or immediately after operation. In the case in which the growth was least advanced the uterus and tubes were removed *per vaginam*. The left tube showed beginning villous cancer.

The Removal of Fibroid Tumors of the Uterus through Celiotomy, leaving Part of or the Entire Uterus.

Témoin (*Archives provinciale de Chirurgie*, No. 7, 1896). The method is the enucleation of fibroid tumors of the uterus through celiotomy. After opening the peritoneal cavity the uterus is drawn forward, the broad ligaments clamped and ligated. An incision is then made over the fibroid tumor and it is enucleated with the fingers, which is very easily accomplished even in the deeper growths. A necessary portion of the uterine tissue is then excised and the wound closed by a deep, superficial, and peritoneal continuous suture. The last suture includes wounds in the broad ligaments. There is but little hemorrhage. The uterus is then replaced, the peritoneal cavity washed out with warm water, and the abdominal wound closed. Where the tumor is very large, it is advisable to also include the uterine artery in the clamp. The clamp blades should be covered with drainage-tube to prevent injury to the tissues. If there are a number of tumors, each one is enucleated, and the wound treated with a strong carbolic-acid solution before introducing the sutures. By this method in many cases the uterus remains and continues its function. Témoin has operated upon thirty-six cases by this method, with only one death, which death occurred because the patient was in a desperate condition before operation.

The Hemostatic Influence of the Intravenous Injection of Artificially-Prepared Serum in a Case of Profuse Hemorrhage after an Abortion.

Le Clerc (*Revue international de Médecine et de Chirurgie*, No. 11, 1896; *Centralblatt für Gynäkologie*, No. 45, 1897). The injection of artificially-prepared serum is commonly employed only as a treatment in patients who have lost a large amount of blood, the object being to replace the blood lost and thus save life. The

observation of the writer shows that the injection of artificially-prepared serum, besides this known influence, also, under circumstances, acts as a hemostatic.

The patient was in her third pregnancy, during which she had had continual hemorrhage and finally aborted. The expulsion of the ovum was followed by profuse hemorrhage, which curettement, tampon of the uterus and vagina, and drugs failed to control. The patient's condition was most critical, the respirations very shallow, and the pulse could not be felt. Forty cubic centimetres of artificial serum (one and a half drachms of sodium chlorate and two drachms of sodium sulphate to the quart of distilled water) were injected into the basilic vein, and about 300 cubic centimetres of the same solution beneath the skin of the shoulder. The heart and respirations were immediately stimulated, and the hemorrhage from the uterus ceased. The patient rapidly recovered. Le Clerc explains the hemostatic influence of the injections through an irritation of the vasomotor constrictors.

Intrauterine Infection of a Myomatous Uterus by the Bacterium Coli Commune.

Depla (*Semaine Gynécologie*, No. 10, 1896; *Centralblatt für Gynäkologie*, No. 47, 1896). The patient was an unmarried woman, 37 years of age, who had a large myomatous tumor of the uterus, which was causing profuse hemorrhage and at times a bad-smelling uterine discharge. The patient before coming under the writer's observation had been very ill and was confined to her bed for a week preceding operation. She had fever in the evening and a pulse of 140. Abdominal hysterectomy was performed, the stump being treated retroperitoneally. In cutting across the cervical canal considerable bad-smelling pus escaped. The fever disappeared after operation. On the sixth day a large abscess appeared in the abdominal wall between the skin and fascia. Later suppuration around the stump was found. These were opened, washed out, and drained. The patient died without ever showing any symptoms of peritonitis. The removed tumor was found to be completely decomposed. Cultures were made from the tumor and a pure culture of the bacterium coli commune was gained. Depla believes the bacteria were introduced into the vagina through defecation, then the uterine cavity was infected, resulting finally in most extensive sloughing of the tumor.

MISCELLANEOUS.

Districts of the Out-Door Visiting Department of the Hospital of the University of Pennsylvania.

(1) From the north side of Market Street to the south side of Spring Garden Street, and from the west side of Broad Street to the east side of Nineteenth Street. **Vacant.**

(2) From the north side of Market Street to the south side of Spring Garden Street, and from the west side of Nineteenth Street to the Schuylkill River. **Vacant.**

(3) From the north side of Spring Garden Street to the south side of Girard Avenue, and from the west side of Broad Street to the east side of Nineteenth Street. Dr. James Herbert McKee, 1519 Poplar Street.

(4) From the north side of Spring Garden Street to the south side of Girard Avenue, and from the west side of Nineteenth Street to the Schuylkill River. Dr. William H. Teller, 2142 Green Street.

(5) From the south side of Market Street to the north side of South Street, and from the west side of Broad Street to the east side of Nineteenth Street. Dr. F. S. Pearce, 1407 Locust Street.

(6) From the south side of South Street to the north side of Washington Avenue, and from the west side of Broad Street to the east side of Nineteenth Street. **Vacant.**

(7) From the south side of Market Street to the north side of South Street, and from the west side of Nineteenth Street to the Schuylkill River. **Vacant.**

(8) From the south side of South Street to the north side of Washington Avenue, and from the west side of Nineteenth Street to the Schuylkill River. Dr. E. V. Clarke, 1731 Christian Street.

(9) From the north side of Girard Avenue to the south side of Berks Street, and from the west side of Broad Street to Fairmount Park. **Vacant.**

(10) From the north side of Berks Street to the south side of Lehigh Avenue, and from the west side of Broad Street to Fairmount Park. Dr. George D. Morton, 3001 West York Street.

(11) From the north side of Berks Street to the south side of Lehigh Avenue, and from the east side of Broad Street to the west side of Front Street. **Vacant.**

(12) From the north side of Girard Avenue to the south side of Berks Street, and from the east side of Broad Street to the west side of Front Street. **Vacant.**

(13) From the north side of Spring Garden Street to the south side of Girard Avenue, and from the east side of Broad Street to the Delaware River. **Vacant.**

(14) From the north side of Market Street to the south side of Spring Garden Street, and from the east side of Broad Street to the Delaware River. **Vacant.**

(15) From the south side of Market Street to the north side of South Street, and from the east side of Broad Street to the Delaware River. **Vacant.**

(16) From the south side of South Street to the north side of Washington Avenue, and from the east side of Broad Street to the Delaware River. **Vacant.**

(17) From the north side of Market Street to the south side of Spring Garden Street, and from the west side of the Schuylkill River to the east side of Fortieth Street. Dr. T. M. Balliet, 3709 Powelton Avenue.

(18) From the north side of Spring Garden Street to the south side of Girard Avenue, and from the west side of the Schuylkill River to the east side of Fortieth Street. Dr. John M. Swan, 807 North Forty-first Street.

(19) From the north side of Market Street to the south side of Spring Garden Street, and from the west side of Fortieth Street to the western limit of West Philadelphia. Dr. H. A. Toulmin, 4009 Chestnut Street.

(20) From the north side of Spring Garden Street to the south side of Girard Avenue, and from the west side of Fortieth Street to the western limit of West Philadelphia. Dr. W. F. Ruff, 715 North Fortieth Street.

(21) From the south side of Market Street southward to Schuylkill River, and from the west side of the Schuylkill River to the east side of Fortieth Street. Dr. Henry A. Newbold, 3907 Walnut Street.

(22) From the south side of Market Street, and from the west side of Fortieth Street southward to Baltimore Avenue to the western limit of West Philadelphia. Dr. Henry Jump, 1240 South Forty-seventh Street.

(23) From the north side of Girard Avenue, west of the Schuylkill River, to the northern and western limits of the city (Hestonville). Dr. Charles M. Hay, 1102 North Fortieth Street.

(24) From the south side of Baltimore Avenue, at its beginning at Thirty-ninth Street, to the Schuylkill River and to the city line (Darby). Dr. Wendell, Forty-first Street and Chester Avenue.

BOOK NOTICES.

A Practical Treatise on Medical Diagnosis. By John H. Musser, M.D. Second edition, revised and enlarged. Philadelphia: Lea Brothers & Co., 1896.

The first edition of Dr. Musser's work appeared in 1894, and was quickly exhausted. The second, as its title states, has been enlarged as well as revised. It is unnecessary to review this work at length; it has become a standard, as could easily have been foretold. The

general excellence of the plan of the work and the faithful attention bestowed upon the smallest detail have made this work second to none of its kind. A few words may properly be used to illustrate the plan of the book. It is divided into two parts: that on general diagnosis and that on special diagnosis. In the first part are included chapters on general observations, the data obtained by inquiry, the data obtained by observation, etc. This part includes a practical section upon bacteriological diagnosis. In the second part of the book the several organs and classes of disease are considered systematically. In the discussion of each disease the subjective symptoms, the objective manifestations, the diagnostic features, and the differential diagnosis are separately discussed, with the result that the picture of the disease is presented with great clearness and at the same time scientific accuracy, and the diagnosis established by all of the aids of clinical investigation. We cannot now enter into detail regarding the individual parts of the book. Not the least commendable feature is its great uniformity, no portion showing inadequate consideration or neglect. We might point out trifling errors here and there, though such are very few. On page 274 is described "Friedreich's respiratory change of sound," the alteration in note obtained in percussion over cavities after full inspiration. This is an error that has become universal in text-books, and that we hope to see corrected at least in our American works. This change of note was first described by Da Costa, and credit was given to this investigator by Friedreich in his paper on the subject. Writers, however, have uniformly accredited the discovery to Friedreich. Some mention might have been made of von Basch's sphygmometer or similar instruments for determining arterial pressure. These instruments are doubtless inaccurate, but probably little more so than the sphygmograph. In the section on diseases of the blood the method of determining the *acidity* is described. This is an obvious error, such as may easily pass unnoticed in proof-reading.

The revision of the work has undoubtedly been done conscientiously. We note the introduction of matter of the most recent kind, some, indeed, that was published during 1896. It is gratifying to see that credit is given to Pfeiffer for the serum-diagnosis of typhoid fever. The work of Widal occurred too recently to be included.

The illustrations in the work are most excellent. The best are the originals, of which there are a great number. In another edition we hope to see still more of the author's replacing those now borrowed from previous works.

Musser's book needs no commendation. We have no work of equal value in English.

Uric Acid as a Factor in the Causation of Disease. By Alexander Haig, M.A., M.D., etc. Third Edition. Pp. 600. Philadelphia: P. Blakiston, Son & Co., 1896.

The third edition of this work has appeared within two years after the second edition, which is conclusive testimony of the interest

felt by practitioners in the question of uric acid and its relations to disease. Nevertheless, at no time since Gorrod called particular attention to this excretion has there been less of demonstrated knowledge of the relations of uric acid than to-day. Much of the work done upon uric acid has been done with inaccurate methods, and it is partly because the separate results of the various investigators must be valued according to the methods employed by them that the discordant conclusions defy harmonization.

Haig makes a fundamental distinction between the uric acid ingested with the food and that formed by the processes of metabolism. The pathologic uric acid he considers to be that which is ingested. Never is there excessive formation of it in the body, the whole pathology concerns defective elimination and the consequences thereof. It is obvious, therefore, that the question of the formation of uric acid is of little importance to him, and, indeed, he expressly states that, although he inclines to Gorrod's theory, the theory of Horboczewski that the formation of uric acid is in some way connected with the leucocytes and the nucleins, is not at all incompatible with his work. His absolute assertion is that uric acid ingested is not converted or oxidized, but is absorbed, circulates, and is eliminated unchanged. In this matter he is at variance with the majority of chemists who have studied the subject. The formation of uric acid he regards as "practically constant in relation to urea," a statement absolutely at variance with most exhaustive studies which have shown that the fluctuations of uric acid and urea do not bear a definite relation to each other. His "law," that "high uric acid means low and falling urea, and low uric acid means high and rising urea," is a pure hypothesis. His next fundamental statement is that a high alkalinity of the blood means increased solubility and excretion of uric acid, and *vice versa*. While this may be true, and while test-tube experiments may indicate its probability, the fact remains that neither Haig nor anybody else has ever with accurate methods demonstrated such a relation between blood alkalinity and uric acidemia. He further states that certain tissues, such as the liver, spleen, joints, etc., are physiologically less alkaline than the blood and other tissues: this is another pure hypothesis for which no proof has been furnished. On account of the hypothetical diminished alkalinity such tissues are supposed to store up uric acid. Now, apart from the theory of Horboczewski, how can we conceive of the spleen, for example, as storing up uric acid? If in solution, what hinders it from flowing out; if not in solution, can we conceive the splenic pulp with its cells bristling with uric acid crystals? That other body cells store up substances furnishes absolutely no analogy for this theory. The "evidence that the fluctuations in the acidity of the urine correspond both in direction and extent with the fluctuations in the alkalinity of the blood" is as yet wanting.

The statement that the ingestion of alkalies increases the excretion of uric acid is contradicted by several careful chemical studies, among which we must especially mention those of the painstaking and expert Nolkowski, who found either no differences or a slight reduction. Another general statement, that increased uric acid-

emia produces a universal vasomotor contraction, lacks experimental confirmation, and even were that demonstrated, it would still not follow that that necessarily implies disturbances in "the circulation, nutrition, functions, and temperature of all the organs and tissues of the body," and "high blood-pressure which directly affects the heart and the vessel walls and otherwise influences (how?) the intracranial, thoracic, and chylopoietic circulations."

His statements as to the effects of various drugs and chemicals are beautifully explicit in comparison with the many unsettled controversies which have resulted from the divergent results of various investigators. The actions of uric acid as a "direct local irritant" have never been worked out.

In considering the various pathological conditions, Haig has not generally estimated the uric acidemia by blood examinations, but has usually postulated it from the results of urinalysis. Until, however, with accurate methods and in a sufficiently extended series of cases, constant relations between uric acidemia and blood-reaction and uric aciduria and urine reaction have been demonstrated, deductions from urine to blood are not trustworthy. A few instances will illustrate this, and also reveal the complexity of the data upon the subject. In leukemia an excess of uric aciduria has been almost constantly noted, while in the blood in this condition it has in a number of well-studied cases been found only in normal traces; in the nephritides many observers have found an increase in the blood, as many others have found the quantity in the urine normal; in conditions of dyspnea an increase in the blood has several times been noted, while in the urine the quantity has usually been normal; in febrile conditions, where, according to Haig, there is diminished blood alkalinity and uric acidemia, increased acidity of urine, and decreased uric aciduria, many observers have obtained varying results, in many cases quite the opposite of those of Haig. Such instances could be extensively multiplied. They serve to show that the data bearing upon uric acid is so self-conflicting that only rarely may conclusions be formulated, and even then most often negative. As regards gout all that can be said is that the only definite relation which has been conclusively proved between it and uric acid is that in some cases of gout there are deposits of urates in the joints, etc., and even that relation is not enhanced by the studies of Epstein, Pfuifer, and von Noorden.

Regarding the "uric acid headache," that symptom complex, is indeed not uncommon; it must, however, be insisted upon that the condition is as often to be relieved by a regulation of the carbohydrates in the diet as by the withdrawal of butcher's meat. Acute rheumatism ought no longer to be classed apart from the infectious diseases, and his assertion that "the salicylates cure acute rheumatism by effecting the elimination of urates" (or in any other way!) is not in harmony with the experience of practitioners who have much to do with this severe condition. Haig's admission that acute rheumatism may be an infectious disease because "rheumatism may be produced by any fever, however caused, . . . that diminishes the alkalinity of the blood, . . . and all fevers do this," is delightfully naïve. We pass over epilepsy, convulsions, hysteria, mental depres-

sion, fatigue, asthma, bronchitis, dyspepsia, Raynaud's disease, paroxysmal hemoglobinuria, nephritis, and diabetes mellitus with only the comment that, however obscure their pathogenesis, it has at least been worked out to the extent that it may be said that uric acid has no causal relation to them. The relations of uric acid to leukemia he considers to be very clear, for is not the spleen enlarged, and is not the spleen (supposed to be) a storehouse for uric acid?

In considering pernicious anemia, which he does not seem to clearly distinguish from chlorosis and other anemiæ, he ignores the now demonstrated toxic hemalysis connected with it, while his methods of blood study in this as in other conditions was not up to the highest standard. His ideas concerning the relations of uric acid to infections reveal how physical and entirely antiquated are his conceptions of oxidation and metabolic processes in general. Gynecologists will, we have no doubt, be glad to learn (and the public as well) that many of the symptoms of dysmenorrhea are due to uric acid, so that henceforth the alkalies and salicylates may be expected, in part at least, to supplant Churchill's iodine and the pessary. Obstetricians, however, will be surprised to learn that, "in normal pregnancy, headaches, fits, mental depression, dyspepsia," etc., "are remarkable by their absence," because pregnant women contain little uric acid. The world at large is here brought to a happy understanding of the facts that "the calm and good temper which follow the act" of sexual intercourse is due to low blood-pressure, while the "terrible storms of passion which may follow in either sex if the desire is not obtained" are due to high blood-pressure. We do not, however, believe that the notion that "uric acidemia and high blood-pressure" are the *corpus insanum* of cases of masturbation will be regarded as a notable contribution to the pathology of psychopathia sexualis.

The book is well bound and handsomely printed, and contains many charts of illustration.

A System of Gynecology. By many writers. Edited by Thomas Clifford Allbutt, M.A., M.D., LL.D., F.R.C.P., etc., and W. S. Playfair, M.D., LL.D., F.R.C.P. New York: The Macmillan Company, 1896.

This is Volume II of "A System of Medicine," edited by Allbutt, the first volume of which has already been noticed in the Magazine.

The contributions to the present volume comprise articles by twenty-six prominent English physicians, many of whom are well known on this side of the Atlantic from their numerous contributions to medical literature.

The subject is introduced by a chapter on "The Development of Modern Gynecology," in which the progress of our knowledge of this subject is briefly told in chronological order. The writer accords to Dr. McDowell, of Kentucky, the honor of having performed the first ovariotomy in 1809. Excellent judgment in the selection of contributors is apparent in this as in the previous volume. This is manifest

in every chapter. The various topics are discussed in a broad and thorough manner, showing familiarity with the subject and a peculiar fitness on the part of the writers for the work assigned them.

While the text is found entirely modern, its tone is more conservative than many recent works on gynecology published in this country. This we believe to be a matter for commendation. The "unbalanced zeal" of the past few years has certainly been a misfortune to a large class of patients, and a source of regret to conscientious practitioners.

The value of a work of this kind to the physician may be estimated usually by its therapeutics. Turning to the chapter on "gynecological therapeutics," we read in the first sentence, "It is a mistake to treat gynecology as a narrow specialism." This is not a new observation, but the necessity for its repetition has not ceased to exist. The same remark applies to all specialties.

As an example of the fulness of this work we quote the heads under which gynecological therapeutics are considered: (1) General Hygiene (routine, clothing, diet, baths, exercise, etc.); (2) Rest (general, local, physiological); (3) Drugs (general and special); (4) Balneology; (5) Local Therapeutical Measures: (*i*) heat and cold: (*a*) external and (*b*) internal application; (*ii*) medicinal agents: (*a*) to skin; (*b*) to vulva; (*c*) to vagina; (*d*) to uterus; (6) Bloodletting; (7) Operations, General Measures: (*i*) antiseptics; (*ii*) preparation of patient; (*iii*) anesthesia: (*a*) local; (*b*) general; (8) Therapeutical Operations: (*i*) dilatation of uterus; (*ii*) curetting the uterus.

A chapter is devoted to the subject of "pelvic cellulitis," a term that has been largely abandoned in this country. We do not see good cause, however, for dropping this phrase, although care should be observed not to use it indiscriminately for all pelvic affections as was the custom at one time.

The illustrations are numerous and satisfactory. There are, however, no reproductions of photographs of patients in various positions, nor of an operating room with its extensive paraphernalia,—a departure from the modern works published on this side of the Atlantic. These are all matters, however, that each surgeon must and will determine for himself according to his experience, surroundings, etc.

From the stand-point of a modern, though conservative representation of a subject which is complete, yet free from redundancy, this work must be considered a success.

DEFORMITIES: A Treatise on Orthopedic Surgery, intended for Practitioners and Advanced Students. By A. H. TUBBY, M.S. (Lond.), F.R.C.S. (Eng.), in charge of the Orthopedic Department, Westminster Hospital, etc. New York: The Macmillan Company, 1896.

The treatment of deformities, especially the application of the necessary apparatus, requires experience in addition to a knowledge of the objects to be obtained, and the best results are secured only

by a considerable expenditure of time and patience on the part of the surgeon. The subject is one deserving our best thought, for many who would have gone through life deformed and helpless are restored to health and useful citizenship.

Spinal caries receives extended consideration. Although he thinks there are exceptions to this rule; in the author's opinion the usual cause of the disease is a traumatism engrafted to a tubercular history,—an opinion now very generally held by the profession everywhere. The old saying, "The less the deformity, the more the paralysis," it is pointed out, although having some foundation, is apt to mislead. The difficulty of predicting paraplegia in advance in any case and of expressing a prognosis will be apparent by quoting the conditions that give rise to this symptom: (1) Pressure arises from the gradual formation and squeezing backward of the granulation material as the sound bone above settles down to fill up the gap. (2) The nerve-roots are affected by the granulation-tissue and involved in the pachymeningitis. (3) The cord is suddenly pressed upon by displaced bone. (4) More or less acute myelitis sets in. (5) Acute tubercular meningitis from sudden diffusion of infective material in the subdural space rapidly carries the patient off. (6) Immediate compression of the cord is occasionally due to extravasation of blood after an incautious movement sufficient to rupture a blood-vessel.

The treatment of caries of the spine is very fully described, and is in accord with the most advanced thought on the subject. Fresh air and sunshine are properly placed first under general treatment. The indications for the treatment of the local condition are specifically given, and the advantages and disadvantages of recumbency are well portrayed. The author prefers the recumbent position in the beginning of the treatment, and until pain has disappeared if there are no special contraindications. Considerable attention has been devoted to the discussion of the different forms of apparatus to be employed in these cases. The subject of abscess resulting from disease of the spine is discussed from a modern stand-point.

More than 150 pages have been devoted to the consideration of the various forms of club-foot. This is exclusive of flat-foot and other deformities. The process of repair of tendons after division has received considerable attention. In the cases that require tenotomy the author prefers gradual correction to full immediate restoration of the normal position,—the "unfolding" of the foot, as he calls it. The writer would apparently restrict Phelps's operation to those relapsed cases, not of severe degree in which the bony distortion is not much marked, but where the soft parts on the inner side are matted together by previous tenotomies and syndesmotomies.

Orthopedic surgery in England is evidently more restricted than in this country. The subjects of tubercular disease of the hip and knee, for example, are not included in this work.

Mr. Tubby has constructed his book upon a broad foundation. He describes the various approved forms of treatment, giving the advantages and disadvantages of each, and indicates his preferences with the reasons therefor. While his large experience has enabled him to form definite conclusions, with which the reviewer finds him-

self in accord on most points, this method enables the reader to weigh the relative merits of the different methods and to form an independent opinion,—a practice that should be more common in medicine. The work is well illustrated, and numerous cases are cited.

The author's hope "that this volume may be a reliable guide to medical men in the treatment of deformities, and to advanced students in the understanding of a somewhat difficult branch of surgery," in the opinion of the reviewer, has been very fully and satisfactorily accomplished. The binding and printing are all that could be desired.

MANUAL OF MIDWIFERY, FOR THE USE OF STUDENTS AND PRACTITIONERS. By W. E. FOTHERGILL, M.A., B.Sc., M.B., C.M., Buchanan Scholar in Midwifery, University of Edinburgh, etc. Pp. 483. New York: The Macmillan Company, 1896.

This little volume, while up to date in many respects, is lacking in others. In particular is this true of the section on version, which is dismissed with but four pages of text. In the introduction of the forceps the general rule of "left hand, left blade" is deviated from, and the operator is recommended to use whichever hand is most convenient to him. It is claimed that the patient is thereby exposed to less danger of septic infection than when both hands alternately are employed in the vagina. It is evident, however, that the left blade, when grasped in the right hand, cannot be introduced with as much safety to the maternal tissues as when used in the manner in practice in this country. The pelvic application of the blades is described, while the more proper and more popular cephalic application is entirely overlooked. Symphysiotomy is described in one page, and the student is left to decide for himself under what circumstances to employ the operation, and what its relative value is when compared with Cesarean section. Pelzer's method of inducing labor (by glycerin injections) is recommended under certain circumstances when already the condemnation of the method is becoming general. With the exception of such defects as the foregoing the subject of obstetrics is presented in a very able and comprehensive manner. Especially to be commended is the portion dealing with embryonic and fetal development. The section on the mechanism of labor is also full and the various stages of the process are clearly and ably described. The illustrations, while not numerous, are well selected and a number of them are original. The type is clear and the mechanical portion of the work excellent.

PALÆSTRA. For the Colloquial Study and Teaching of the Latin Language. By ARCADE MOGYORÓSSY, Editor of "Præco Latinus," etc. Philadelphia: 1328 Spring Garden Street, 1896.

To any one who desires to acquire a practical working knowledge of the Latin language, Palæstra will be found invaluable. This method is at once simple and natural, and more rapid progress is pos-

sible by it than with any other known to the writer. It will appeal particularly to physicians and others who feel the need of a familiarity with Latin, but whose time is so fully occupied that but a limited opportunity is allowed for its study. With Palæstra the Latin language may be learned colloquially either with or without a teacher. Of course, the best results will be obtained if the aid of an efficient teacher, who is able to use the colloquial method, be employed.

The lessons are all in Latin. Cuts of familiar objects are inserted, and the sentences referring to these are so framed as to make the meaning clear to any one. The explanatory foot-notes are in English, and the necessary grammatical considerations are appended to each lesson; they are also in English. The course is progressive,—each succeeding lesson being constructed upon the former one.

The value of a knowledge of Latin in the learned professions has always been recognized. The reason such a large number of persons lack this accomplishment is because the study of Latin in our schools is made so unattractive that students take little or no interest in the work, and also because the methods employed are not calculated to impart a working knowledge of the subject, but far too frequently serve only as a mental discipline. This book is suitable not only for those who desire to study the language after leaving school, but also for children, and we should like to see it introduced into our institutions of learning everywhere.

Two more fasciculi will complete the first part of the system.

Infantile Mortality during Childbirth, and its Prevention. By A. Brothers, B.S., M.D., Visiting Gynecologist to Beth-Israel Hospital, New York, etc. The William Furness Jenks' Prize Essay of the College of Physicians of Philadelphia. Pp. 179. Philadelphia: P. Blakiston, Son & Co., 1896.

In the preparation of this essay Dr. Brothers has worked upon the basis of a ten-years' active midwifery practice, combined with a large experience in the fields of pediatrics and every-day gynecology. This extensive experience is evident in the skilful manner in which he deals with the subject in hand and in the comprehensive scope he takes. The entire work is a conscientious and passionate appeal in behalf of the unborn child as opposed to the well-established superstition of the profession that the sacrifice of the child counts for little or nothing. Especially interesting are his statistics on infantile mortality. He finds that in all pregnancies advancing to full term there is an amazing ratio of one dead-born child to 28.5 deliveries, or a mortality of nearly 4 per cent., and that before one month has elapsed there is a proportion of one death to every 10.8 labors, or a mortality of 10 per cent. of the children. He then proceeds to a study of the morbid anatomy and causes of infantile mortality, dividing the latter subject into the causes of maternal origin and those of fetal origin. Dystocia in its various forms and obstetric operations necessarily occupy a large portion of the body; the final chapter being devoted to a few suggestions as to the prevention of

this appalling infantile mortality. The subject is systematically and scientifically discussed, and the book is a valuable contribution to the obstetric literature of the day.

Borderland Studies. By George M. Gould, A.M., M.D. Pp. 380. Philadelphia: P. Blakiston, Son & Co., 1896.

In this volume Dr. Gould has united a number of essays heretofore published in various literary magazines, and has added a number of editorials from the *Medical News*. Dr. Gould's style is always brisk and forceful, his motives are the purest, and his thought is always earnest and progressive, and we welcome this collection of his writings because it will enable a larger reading public to enjoy and profit by them. Few of the essays are directly medical. Many bear upon science and the biological aspects of life, others deal with sociologic problems, while perhaps the best ones are concerned with philosophic problems. We confess that to our feelings the discussion upon foot-ball is entirely out of place. Both in subject-matter and in style it is entirely unworthy to be placed with the other essays which compose the book. The intelligent lay public, as well as the medical profession, will find in Dr. Gould's writings much of mental and moral educational value.

The International Medical Annual and Practitioners' Index. New York: E. B. Treat & Co., 1896.

The fourteenth annual issue of this valuable one-volume epitome of medical progress fully sustains the enviable reputation of the previous volumes. The work is edited by thirty-seven department editors, American and European, all of whom are well known in medical literature. The same general plan as heretofore has been retained.

Part I comprises the new remedies, together with an extended review of the therapeutic progress of the year.

Part II includes a number of recent articles by eminent authorities: "How to determine the parasite of malaria;" "The remedial value of cycling;" "Sensory distribution of spinal nerve-roots;" "Angioneurosis;" "Life insurance;" and "Röntgen's method of shadow photography, illustrated."

Part III, comprising the major portion of the book, is given to the consideration of new treatment. It covers 500 pages, and is a retrospect of the year's medical and surgical progress.

The fourth and last part is made up of miscellaneous articles, such as "Recent advances in sanitary science;" "New inventions in instruments and appliances;" "Books of the year," etc.

The arrangement of the work is alphabetical, and, with its complete index, makes it a very useful reference book.

In short, this "Annual" is a recapitulation of the year's progress in medicine, serving to keep the practitioner abreast of the times with reference to the medical literature of the world.

A Manual of Medical Jurisprudence and Toxicology. By Henry C. Chapman, M.D. Second Edition. Philadelphia: W. B. Saunders, 1896.

This book contains in a small compass a mass of useful information on subjects which receive but scant attention in our medical schools, yet are of the greatest importance on account of the frequency with which law and medicine come in contact in the courts at the present time. Few physicians in a large city escape the disagreeable duty of appearing before a coroner's jury. A book like the one before us offers valuable instruction as to many questions that are raised on such occasions, and a careful perusal of it may save a great deal of annoyance and embarrassment. The author's experience as coroner's physician of Philadelphia has well fitted him to deal with the problems of forensic medicine.

Elementary Technic in Histology and Bacteriology. By Ernest B. Hoag, A.B., B.S., and H. Kahn, Ph.M. Chicago: E. H. Colegrove & Co., 1895.

The authors present in a condensed and chiefly schematic way the principal methods of technic employed in normal and pathologic histology and in bacteriology.

We believe that for the beginner the book is too concise, but that it will be found useful by those who have had experience and wish to have close at hand a book to which they can promptly refer for a forgotten formula or method.

We miss any reference to formalin as a fixing or preserving agent, possibly because the text was written before this substance became widely known.

Syphilis in the Middle Ages and in Modern Times. By Dr. F. Buret, Paris, France. Translated from the French, with notes, by A. H. Ohmann-Dumesnil, M.D., Professor of Dermatology and Syphilology in the Marion Sims College of Medicine, etc. Being Volumes II and III of "Syphilis To-Day and Among the Ancients," complete in three volumes. Philadelphia: The F. A. Davis Co., publishers.

The date and place of the origin of syphilis has ever attracted the attention of a large number of physicians. Numerous theories have been advanced, and some of them well-supported, but arguments just as strong soon appeared on the opposite side of the question.

Dr. Buret has set himself the task of bringing order out of this chaos of opinions. He seems to prove that syphilis has existed from the remotest antiquity. The author says, "Syphilis is a contemporary of the first ages." "Syphilis prevailed in an undisputed manner

during that entire period of a thousand years known as the Middle Ages." The American origin of the disease is clearly disproved.

The evidence offered by Dr. Buret is documentary,—scientific, historical, and literary,—not theoretical. The task has not been a light one, as might be supposed. The fact that syphilis was not distinguished from other venereal diseases for a long time and was only definitely separated from chancroid by Bassereau, a pupil of Ricord, in 1852, adds to the difficulty of collecting the important data. Under a great variety of names, however, the author has collected from literature descriptions of a disease that occurred among all civilized nations that correspond exactly to the manifestations of syphilis as we know it to-day.

The volume closes with a chapter on the "Treatment and Prophylaxis of Syphilis." It is not intended to be a guide in the treatment of the disease, but only to indicate the various methods that have been employed from the earliest times to the present.

Any one interested in this subject cannot fail to profit by reading Dr. Buret's book.

INFECTION AND IMMUNITY, WITH SPECIAL REFERENCE TO THE NEW DIPHTHERIA ANTITOXIN. By CHARLES RUSSELL BARDEEN, B.A., of Johns Hopkins University. Reprinted from "The School Bulletin," Syracuse, 1895.

An elementary essay on these subjects, evidently intended for laymen. The references are strikingly inexact. The publishers of Sternberg's "Manual of Bacteriology" are given, and Wood and Soner, and Pepper's "American Text-Book of Medicine" appears in one place as Peffer's "American Hand-Book of Medicine," in another as Peffer's "American Text-Book of Medicine."

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THE RELATIONS OF NERVOUS DISORDERS IN WOMEN TO PELVIC DISEASE.[1]

REMARKS BY

S. WEIR MITCHELL, M.D., LL.D. (HARV.),

Philadelphia.

As I understand the subject for discussion, it is an inquiry as to how far nervous diseases in women have their origin in pelvic disease.

This discussion will, of course, take many directions, and I could perhaps with profit offer the Fellows a long experience of many forms of neurosis associated with pelvic disease and cared for by a combination of medical means with the aid of mild local and mechanical treatments. This has, however, been so often and so completely done in the past that I prefer rather to consider with the main subject how far the increased use of surgical methods in dealing with pelvic diseases has been an advantage.

I have not had time to go far in either direction. I shall therefore fall back upon the large general knowledge which a man stores up in his mind as the result of years of thoughtful experience; and I shall not attempt to be statistical or to report cases at length.

I shall consider the chief neuroses. I shall ask if they depend on pelvic functions and how far surgical destruction of function and removal of pathological tissue is therapeutically of use. I shall not consider pain nor asthenic states.

[1] A discussion held at the College of Physicians of Philadelphia, February 3, 1897.

NOTE.— It will be observed that the subject has been discussed from the stand-point of the neurologist, gynecologist, and general practitioner. The papers have been arranged in this order.

I shall deal in this relation with epilepsy, insanity, and hysteria; three groups of disease which medical men for a long time have been apt to refer to disease of the uterine organs as a parent source.

And first as to epilepsy. There is a great deal in the history of this condition to justify this attribution. Thus, epileptic attacks are apt to return at the menstrual period with greater frequency than at others, and in certain persons (epileptics) the attacks never occur save when they appear either just before, just after, or during the monthly flow.

In all such cases both physicians and surgeons have been tempted to arrest, by oöphorectomy, this apparent cause of trouble, even where the organs were healthy, and they have been, of course, still more ready to interfere where the epilepsy was menstrual and the condition of the pelvic organs seemed to make oöphorectomy proper.

This seeming relation of disease to a function has led physicians and surgeons to think that to end the function will end the disease. Therefore many normal ovaries have been removed; with more reason, with larger hope, and with equal disappointment numberless diseased ovaries have also been taken away.

In no case seen by me has ablation of ovaries and termination of menstruation cured an epilepsy.

I have never sanctioned such operations where the appendages were sound. I have agreed thrice to these operations in epilepsy with such pelvic disease as of itself would justify oöphorectomy. In all three, after some delay, the fits returned and were in no way permanently aided.

I recall, as an illustration, a case in which there were epileptic states of great severity only at the menstrual epoch. The ovaries were apparently sound, but as two physicians and a surgeon were against me my opinion was not regarded, and ovariotomy was performed. The attacks, which had been daily, stopped for seven weeks after the operation, and the case was hastily spoken of as a great triumph. The patient, however, then became worse, and permanent loss of mind resulted. Such temporary cessation of epileptic attacks is too well known to the neurological consultant to call for remark from me. Change of environment, any great alteration of the habits of life, moral influences, and the like, may suddenly, and for a time, put an end to the fits; removal to a hospital will often do the same; change to a country life for a city patient, or the reverse, for a country patient, may all exert a temporary effect. I saw a number of cases during the war where life in camp postponed or lessened the fits, and two in which it put an end to an epilepsy.

I think that surgeons should be exceedingly careful as to operations for the disorder in question. They are often lured into operation for a trouble in regard to which they alone are asked to give an opinion, and operations are done without medical consultation, which to my mind is one of the great—shall I say surgical—evils of the present day. The ease of operation, the freedom from mortality makes that seem of little moment, which should in every case receive the gravest consideration. The surgeons here present to-night know that I am not now criticising them. But everywhere through this country men and, I fear women, are doing an amount of pelvic surgery which I am free to characterize as reckless, and which is too often based on inexperienced individual opinion. In fact, surgery has lost much of that keen sense of responsibility which grew out of the larger mortality of other days.

The insanities of women present a somewhat different case.

Insanity of various types in women occurs in which the menstrual period is sometimes the originative and sometimes the determinative cause of the mental disease.

Because an insane woman is usually worse at her period, it is no reason why the flow should be stopped by operation any more than that this measure should be resorted to for epilepsy. That the climacteric puts an end to these disorders is an old delusion; in fact. the change of life, so-called, is quite as likely to make them worse as to better them.

In certain constitutions the menstrual period is always a time of mild melancholia, and this disorder may then rise to the grade of suicidal danger in certain persons who are neurotic, and from other causes in indifferent health. When such cases are extreme it becomes a question whether it may not be right to interrupt even a normal flow from organs which are healthy; but the necessity should be a very grave one.

I recall four cases, three of which illustrate the occasional value of bringing about surgical cessation of the menses in order to relieve insanity. On the other hand, I have seen at least a score where the cases were ill chosen and no good was done by stopping the flow. In each of the four cases of which I shall speak consultations were held with two other men in the profession.

The first case was that of a highly hysterical, cultivated lady of 40 years, unmarried, as, in fact, were all the cases referred to. After long years of aggravated hysteria she suffered so much from melancholia at her menstrual period that she besought me to give her relief. Operation was positively refused by her family, but five or six years later, as she was getting much worse, she took matters into her own

hands, and oöphorectomy was performed by Professor Goodell after I had yielded a reluctant consent. This resulted in remarkable improvement of her physical health, but the insanity became abruptly worse, and has now lasted for twelve years. It should be said that the condition of the organs at the time of operation was such as to furnish some excuse for their removal.

The second case was that of a lady of 34 years; unmarried; highly educated; and possessed of a large estate. Her entire family had died of brain trouble, and several had been insane. At the age of 29 years she began to have occasional attacks of hysteria of the aggravated type so common in France, so rare in this country. Later these attacks clustered about the menstrual period. In the intervals she was comparatively well. Soon after I took charge of her she became violently homicidal at the menstrual epochs. The details of this case I have given elsewhere, hence I shall not report it further here. Her condition became so distressing that oöphorectomy was performed, and the organs were found to be as nearly normal in appearance as they ever are. She ceased to flow, but for many months she had slight hysterical attacks without melancholia. She was able, however, to spend her summers in the woods, and, having all the advantages of wealth, she gradually improved, until now she has been perfectly well for many years.

The third case was that of a lady situated very similarly. She was about 34 years of age when I first saw her. At the time she was 30, her periods began to be accompanied by marked and increasing nymphomania. She was a woman of firm beliefs, great resolution, and singular purity of mind. The condition distressed her deeply, and as it was associated with furious sexual dreams at the time of her periods, she implored me to put an end to the menstrual flow.

Examination revealed enlarged ovaries and serious tubal disease, the nature of which I do not now recall. Oöphorectomy was performed by the late Professor Goodell. She lost her mental disorder at once and is well at the present time, although it was a year before she recovered fully from the effects of the operation.

The fourth case was one of melancholia at the menstrual period, with maddening headaches, in a woman 26 years of age. She had grave disease of the tubes and ovaries, and she suffered severely. As soon as the organs were removed and she ceased to flow she recovered her physical health and slowly lost her melancholia. She never regained the physical health she had before the operation. Although it is thirteen years since she was operated upon, she has at each time of the month when the menstruation should occur the same character of headache as she had before operation.

A great many aggravated cases of hysteria have disease of the pelvic organs, which is so apparent as to make recovery by removal of the ovaries and tubes seem probable. A large percentage of these cases are not made better by operation, but, on the contrary, are often made much worse, or else gain nothing on the side of the neurosis.

I do not say that this is always the result, but I wish to insist that we must not expect too much from the knife alone. Were I to criticise further the pelvic surgery of the day it would be in the direction of the absence of prolonged preparative treatment. Usually a year passes after operations of the nature now considered before full health can be expected, and a great many cases of oöphorectomy suffer for years with pain in the region of operation.

I conclude that epilepsy truly dependent upon normal uterine function or due to abnormal states of the sexual apparatus is rarely (I am tempted to say never) seen. In all my life I have met with but four reflex epilepsies; none were from uterine or ovarian or tubal disease.

I am strongly inclined to think that some, at least, of the cases classed as epilepsies of ovarian origin are in reality excessively violent hysterical convulsions. Every neurologist here will recall how often he has been called upon to treat a case for epilepsy when the attacks were merely a severe form of hysterical spasms.

I conclude also that insanity is aggravated by the menstrual epoch, whether normal or not; but that it is very rarely caused by it alone.

Hysteria is not a disease of sex, and it is not often cured by oöphorectomies alone, even by such as are justified by physical disease.

I am inclined to think that post-operative traumatic insanities are more common after pelvic operations than after others. A great deal of uterine and ovarian disease should escape the knife by the use of patient medical treatment. No grave surgery of the pelvis should be allowed without medical consultation.

I further conclude by stating that both Goodell and I have long suspected that insanity after operations is sometimes due to the anesthetic, since twice we saw it follow operations of a quite trivial nature; but this is somewhat off from the line of this discussion.

Remarks by

Charles K. Mills, M.D.

The few remarks that I have to make will be based upon personal experience, and are in the main suggested by what has already been said in the discussion. It should first be remembered that pelvic disease or disturbance is sometimes the result of mental or nervous disease. It is, of course, well known that during the progress of melancholia menstrual disorder and even the entire cessation of menstruation is not infrequent.

Touching upon another point, brought out by the previous speakers, I am inclined to make the assertion that a real epilepsy, a real hysteria, or a real melancholia was never absolutely caused by pelvic disease. These affections are essentially affections of the nervous system, although it is true that pelvic disease, like other serious disturbances of the system, may act as exciting causes in those who are predisposed. The neurotic constitution is the primary and underlying factor. Neurasthenia in some instances seems to be directly traceable to pelvic disease.

Gynecologists should become familiar with certain cases of obsession or monomania. Patients suffering with such obsessions are, in fact, the victims of elementary delusions. A patient may have an obsession as to pain in any part of the body, and I have seen some extraordinary cases of this kind in which the pain was referred to the pelvic organs, but in which most careful and prolonged observation could discover no local disease to account for the pain. Operations are sometimes performed upon these cases, only to have the pain return in the same or in some other place. Some of these cases are probably to be ranked as instances of hallucinatory pain. Although it may at first sight appear somewhat foreign to the subject, I might here recall the case of a patient who first complained of pain at the base of one of her teeth. One tooth after another was removed, in the vain search for the source of the pain, until she lost every tooth, and the last that I heard of her, an oral surgeon was trying to find the cause of the pain in the cavity caused by the removal of the last of her teeth. Some of the cases referred to by Dr. Hirst in his remarks are of this character,—that is, their pains and aches are psychical, in their heads, and not in their pelves.

With regard to insanity following operation upon the pelvic organs I might summarize what I have to say by stating that I can recall at least three distinct forms of mental disorder subsequent to such operations: (1) A form of acute mania; (2) delusional insanity,

the delusions occasionally having some reference to the operation; and (3) a form of querulous melancholia. Hysteria with all its morbid train not infrequently remains after operations which have been intended for its relief. In some instances, however, operations may be desirable, or even demanded. When pelvic disease is clearly present, operation or local gynecological treatment may do much for the patient, and in very rare instances, even when marked evidences of disease are not present, ovarian operations seem to be beneficial, as when extreme nervous excitement is present at or near the time of menstruation.

The Fellows of the college will remember that some years ago I presented a paper on neuritis and myelitis following labor. Some of the points to which attention was called in the paper are well worth remembering in the present discussion. The probable presence of neural inflammation should be remembered by the gynecologist regarding the cases which come into his hands for pelvic treatment. The nerves of the sacral plexus are not infrequently the subject of a subacute or chronic inflammation. One of the greatest benefits of the rest treatment is the relief of this inflammation.

Remarks by

Wharton Sinkler, M.D.

The subject which has been so ably discussed this evening from the stand-point of the gynecologist, and that of the neurologist, is one of great interest. If a woman becomes afflicted with a nervous disorder of any kind, the first thought of her friends is that she must have some disease of her sexual organs. This view is so common that, at the present day, many cases of purely nervous disease are brought first to specialists in women's diseases. I am happy to say that it is now the rule for gynecologists to refuse to treat these cases locally. A few years ago, nearly all cases of hysteria or neurasthenia were treated for months and even years by means of pessaries, local applications, dilatation of the cervix, and curetting, and in an appalling number of such cases, perfectly healthy ovaries were removed with the idea of relieving the nervous derangement from which the patient was suffering.

The late Dr. William Goodell showed his great wisdom when he declared that the pelvic organs were not nearly so often to blame as was commonly supposed, and he cried "halt" to the frequent operations which were being done without sufficient justification. The physician in charge of a case of mental or nervous disease, generally has a constant struggle to keep up with the friends and relatives of

his patient, who are eager for an examination or local treatment, or it may be, operation. It seems to the laity, and, indeed, the same idea is found to prevail among some members of the profession, that there must be some local disease to cause any nervous disorder in a woman, and an operation, or possibly, the correction of some uterine displacement, will be a short way to complete restoration of the patient's health. To some extent, gynecologists have been to blame for this popular cry for operations on the pelvic organs. A few years ago, specialists were far too ready to operate, and they did not always deem it necessary to find evidences of disease in the organs themselves before they were removed. Ovariotomies were done for the relief of epilepsy, insanity, hysteria, and even for idiocy. The number of operations done upon the pelvic organs has been enormous. A recent writer[1] quotes Dr. Cann as asserting that "in Paris, since 1883, 40,000 ovariotomies or hysterectomies have been performed, and estimates that there were 500,000 such operations done in all France during that time." Dr. Cann says, "of 102 operations done at St. Joseph's Hospital in Paris, all who escaped death are in a more deplorable condition than before operation, and that the nervous conditions were augmented in almost all." He thinks that "probably 4 per cent. derived some benefit to the nervous troubles from the operations."

The amount of literature bearing on the relations between nervous disorders and the diseases of the pelvic organs is very great, but the testimony adduced is most contradictory. As a rule, gynecologists favor operations, with, of course, exceptions, while neurologists oppose them. Gray believes that there is no proof that genital irritation in males or females can cause nervous or mental disease, except in predisposed persons. Rohé, on the contrary, who has had a large asylum experience, believes that many cases of insanity in women depend upon pelvic disease, and are cured or benefited by operations. Krämer has collected all the cases he could find of ovariotomies and other pelvic operations which were performed for the relief of neuroses and psychoses, and has gathered together from various sources 300 such cases. In 200 of these cases the operation had a beneficial effect; and in 100 it was doubtful or unfavorable. The author reports two cases of his own which were cured of hystero-epilepsy by operation, but he maintains that the same result could have been reached without mutilation, and this is probably true of the majority of the 200 favorable results which he reports. Charcot condemned all operations upon the pelvic organs in the treatment of hystero-epilepsy,

[1] Dr. C. W. Chancellor, Maryland Medical Journal, October 3, 1896.

mania, etc. He did not believe that such conditions as genital hysteria, genital epilepsy, or menstrual epilepsy existed. Other French writers, Giles de la Tourette, for example, hold the same views as were held by Charcot.

There is no doubt that there have been a number of cases of nervous disorders which have been relieved by operations upon the uterus or ovaries, and it is no doubt true that some of these cases would not have recovered had no operations been done, but we must bear in mind the effects of operations *per se*, and I would call attention to the valuable paper on this subject by one of our Fellows, Dr. J. William White.

Like Dr. Mitchell, I have seen several cases of melancholia recover speedily after some serious accident. A patient of mine attempted suicide by setting her clothing on fire. She was terribly burned, but almost immediately recovered her reason.

My own experience has been that comparatively few nervous or mental disorders depend upon uterine or ovarian disease, and that, unless there is a highly neurotic tendency in the individual, neither disorders in the pelvis nor in any other part of the body produce reflex nervous diseases.

Time will not permit me to give illustrative cases, but I have seen many patients, three or four years after the removal of the ovaries and appendages for the relief of some form of nerve-trouble, who were, if anything, worse than they had been previous to the operation. Many of these patients have been completely restored to health by other means, but it must be admitted that there are other cases which have not been benefited by any plan of treatment. I recall one case in particular, in which Dr. Battey, the great advocate for the operation of oöpherectomy, had operated himself for hystero-epilepsy, three years previous. The patient's condition was deplorable; the attacks of hystero-epilepsy were of frequent occurrence; her body was emaciated to the last degree, and her stomach tolerated almost no food. Under a course of "rest" treatment, the patient recovered her health entirely, and has remained well to the present day, a period of over six years.

Another patient, who had extreme neurasthenia, with severe attacks of abdominal pain, and inability to walk, was seen two years after an operation for the removal of the ovaries, in the same condition as she had been previous to operation. She recovered under careful management, and has remained a comparatively well woman. I could also mention a number of cases that had been condemned to lose the ovaries, and who recovered their health through other means.

If pelvic disease exists, it often aggravates all nervous symptoms,

but in many instances the menstrual disorders and ovarian neuralgic pains seem to be rather the result than the cause of the existing nervous disease.

Remarks by

F. X. Dercum, M.D.

The two great neuroses to which women are especially liable, neurasthenia and hysteria, have etiological factors so numerous and diverse that a brief study of the subject cannot but convince us that pelvic disease, if it can be considered a factor at all, can only be concerned in a small percentage of cases. In looking for a special cause for neurasthenia or hysteria such etiological factors as neuropathic heredity, improper education, the strains imposed upon women both during adolescence and during adult life,—strains entirely independent of their sexual functions or of any possible pelvic disease,—such, for instance, as overwork, the worries incidental to household duties, the care of children, the daily frictions of life, are too often overlooked. These general factors are far more potent as causes of the great neuroses than local disease, no matter how serious its nature. Local disease, it must be remembered, if it acts at all, can only act as an exciting cause upon an organism already gravely predisposed. How little local organic disease of itself acts as a factor in the causation of hysteria every one of us will recognize when I cite but the single instance of cancer of the uterus in which neurasthenic and hysterical symptoms are notoriously absent. Is it not, indeed, significant that in such a grave pelvic disorder these symptoms are rare, and that in the majority of cases the hysteria and neurasthenia are referred to such trivial conditions as a tear of the cervix or laceration of the perineum or, perhaps, an apocryphal ovarian tenderness.

If local, organic disease acts even as an exciting factor we should certainly meet with nervous affections in grave forms of pelvic disorder most frequently and little or not at all in the minor pelvic troubles. It is hardly necessary to point out the unequivocal existance of neurasthenia and hysteria in the male, where by no possibility can these disorders be ascribed to pelvic disease. Again, experience demonstrates that surgical interference does not cure either neurasthenia or hysteria, and as far as pelvic or abdominal operations are concerned, especially ovariotomies, it is universally conceded by neurologists that the patients instead of being made better are made worse. Every one of us has had under his care and observation cases in which the nervous conditions, which the operation was intended to relieve, were made indescribably more severe by the added symptoms of an enforced and premature menopause.

Admitting, however, for the sake of argument, that nervous disorders which owe their origin to pelvic disease really exist, these disorders would be separable into two groups: first, the general neuroses, neurasthenia, and hysteria; and, secondly, local nervous affections directly dependent upon the organic disease within the pelvis.

As regards neurasthenia, let me point out that it is separable into, first, neurasthenia simplex, and, secondly, neurasthenia symptomatica. The latter is not a true neurasthenia but a spurious neurasthenia, and if pelvic disorders are concerned at all in the production of neurasthenia it must be this spurious or symptomatic form. It is conceivable that serious local disease shall weaken the entire organism and with it the nervous system, and that various signs of nervous weakness should be present is but natural, but these signs do not make up that disease which we know typically as neurasthenia simplex. They are symptoms of nervous weakness such as accompany *other* diseases either local or general. They are seen, for instance, in phthisis, in chlorosis, and the various anemias, in the toxemias due to infection or metallic poisoning and in other grave disturbances of nutrition, but we will all agree that they form in such cases a very subsidiary and very unimportant group of the symptom complex. Strangely enough, as I have already pointed out, nervous symptoms are not present in really grave pelvic disease such as cancer, but pelvic lesions are only discovered in cases presenting nervous symptoms after careful search by skilled diagnosticians, and then consist of lesions, as a rule, unconsequential and unimportant.

To some extent of late years gynecologists seem to have recognized these facts, because minor gynecology, so-called, is happily almost abandoned. The amount of harm that the unnecessary handling and meddling with the genitalia has done can probably never be estimated. One can hardly judge of the enormous mental impression a first examination must make upon a young girl, especially if that girl is already hysterical and neurasthenic, already neuropathic by heredity and predisposition. Not only is the great evil of the moral shock to be taken into account, but the fact that there is lodged in the patient's mind a more or less vague but fixed belief that she has some mysterious local disease to which she only too willingly agrees to attribute her nervous manifestations. In consequence, she sooner or later insists upon a repetition of the examination or a continuance of the local treatment once begun, and the morbid idea thus implanted becomes hopelessly rooted, never, perhaps, to become displaced.

These words apply also to the harm done to adult women; to married women. The old practice of swabbing the cervix, of cauter-

ization, or of pencilling with iodine or carbolic acid, and the more modern fad of introducing an electrode into the vagina,—in short, the handling, the sounding, the passage of the speculum itself have done nothing to cure the patients, but have superimposed upon the pre-existing neurasthenia and hysteria a train of morbid ideas which not infrequently grow into a veritable psychosis. Not only does the patient acquire the fixed belief that there is something serious and mysterious the matter with her, but she has added to this belief the dread of sterility, the dread of hopeless organic disease, or the fear that she has become unfit for marriage; or other equally depressing ideas make their appearance. Surely, if the pelvic organs really play a *rôle* in the etiology of neurasthenia and hysteria, it is largely because the gynecologists have created that *rôle*.

Among the symptoms presented by hysterical women there is one deserving of especial attention. It is one which, more than any other, suggests to physicians unacquainted with hysteria, pelvic disease. The symptom is that of the so-called ovarian tenderness, so misnamed by the French. This ovarian tenderness is, as a rule, only evident upon pressure, light or deep, applied just above the groin. In some cases, however, instead of there being merely tenderness, it amounts to a constant and severe pain, for which the patient anxiously seeks relief. The position of this symptom of ovarian tenderness in the syndrome of hysteria is so well known that it needs hardly to be mentioned. The pain is as a rule confined to a limited area, is found most frequently upon the left side, and is very often associated with a similar, though somewhat larger, area of tenderness beneath the left mammary gland, and, it need hardly be said, also, with other definite well-marked hysterical stigmata, which it is not necessary to touch upon here. As a rule, the seat of this "ovarian pain," or *inguinal* pain as it ought to be called, is revealed by careful examination to be superficial and not deep. That it is really situated in the skin and tissues of the abdominal wall and not within the pelvis, I believe, can always be demonstrated by means of the following procedure: The painful area having been carefully localized on the abdominal surface, the tip of the forefinger of the right hand is allowed to rest lightly upon it; the left forefinger is then introduced into the vagina and directed upward and to the left until its tip is immediately beneath the tip of the forefinger of the right hand which is upon the abdominal wall. Just as soon as pressure is made between the two fingers, the patient flinches, while the patient does not flinch when pressure is made in other directions or when other portions of the abdominal wall are included.

By this means I have succeeded not infrequently in isolating and demonstrating beyond a doubt the site, and therefore the character, of the pain. In some cases, just as in spinal tenderness, the pain radiates and becomes somewhat diffused, but it always radiates from a superficial centre in the abdominal wall. Just as there are cases of spinal tenderness in which the tenderness is at one time superficial and at others deep, so there are cases of inguinal tenderness in which the tenderness seems at times to be deep-seated; but even here, by the procedure I have described, the maximum point of pain can always be isolated and shown to exist in the abdominal tissues.

This hysterical inguinal pain has at times forcibly suggested to me the clavus hystericus,—the boring, penetrating pain which hysterical patients feel in limited areas about the head,—and, indeed, in rare cases this inguinal pain is just as severe and just as agonizing, but is no more intrapelvic in its origin than is the clavus of the head. If any doubt with regard to the nature of the pain were to exist in our minds, it would be instantly dispelled when we realize the fact that we very frequently meet with it among men, and secondly, also, in women whose ovaries have been removed,—removed, indeed, in a vain attempt to relieve this pain.

Hysteria and neurasthenia are great neuroses with little or no relation to local conditions. They are diseases general in character, aggravated, it may be, now and then by special local lesions, but certainly not caused by them. The origin of these diseases is to be sought for in the ancestry, in the bringing up of the child, in its training, in its education, in the struggles and in the trials of life, not in a laceration of the cervix, a cyst of the ovary, or a tear in the perineum.

If gynecologists retreat from the position that the great neuroses are caused by pelvic disease, but maintain, on the other hand, that local nervous disorders are caused by them, I will ask, first, What are these local disorders? It is said, for instance, that lumbar and sacral neuralgia, pain in the sciatic distribution are caused by pelvic disease. If so, it has not been my fortune to meet with cases. I do not, of course, deny the possibility of their occurrence, but certainly lumbar or sacral neuritis and neuralgia due to such causes must be excessively rare. As regards other nervous symptoms, such as vague pelvic pains, pains referred to the back, the hips, or thighs, they certainly cannot be dignified by the term nervous disorder, but must be looked upon merely as symptoms of pelvic disease itself, just as there are various other surface areas of the body to which the pain of deep-seated organs is referred.

The mere fact that in mental diseases temporary improvement has now and then followed operations is no argument in favor of the application of surgical procedures in the treatment of insanities. I can supplement Dr. Mitchell's remarks concerning the improvement now and then seen in melancholia after trauma, by calling to mind similar instances following trauma occurring in so grave a mental disease as paresis. Indeed, in paresis marked remissions are sometimes brought about by accidents, burns, or acute inflammatory troubles, such as erysipelas.

In my opinion operations upon the pelvic organs should be limited to actual diseases, such as pyosalpinx and malignant affections. In such cases the operation should be performed, not for the relief of an incidental nervous symptom, but because of the local conditions themselves; just as we set a broken leg, not because the fracture occurs in an insane man, but because the leg is broken.

Remarks by

James Hendrie Lloyd, M.D.

Modern science has almost entirely abolished the idea that hysteria has its seat in the uterus, but in spite of this it seems that this idea still obtains to a certain extent in the minds of some gynecological surgeons. I do not quite agree with Dr. Mills, however, that hysteria can never be caused by pelvic disease. I think there is a difference between viewing hysteria as having its seat in the uterus and as having its exciting cause in the uterus. Hysteria is a psychoneurosis, but it can be excited by numerous diseases which act as exciting causes. It is conceivable that it might be started by a diseased ovary, an ovarian tumor, extensive cervical lesion or lesions of the floor of the pelvis; and in these cases operative interference might favorably affect the hysterical manifestations. Still, such complications, in my observation, are rare, and do not justify the opinion that grave hysteria has always, as an exciting cause, some obscure pathological state of the womb or ovaries. It must be recalled that the operation of castration in the female is sometimes followed by grave hysterical troubles, in such a case the very operation designed for relief becoming in turn an exciting cause of still more profound trouble. I have had under my observation for the last three months a young woman who is a typical case of hysteria. She is paralyzed from the hips down, and she has various other symptoms of a hysterical type. Her mind is completely perverted.

She has been operated on four times, all the operations being grave gynecological operations, two of them being laparotomies. I do not know how many of her pelvic organs have been removed, but

I know that these operations have succeeded in putting her into bed as a practically hopeless invalid. Such a case should stimulate gynecologists to attempt to make some use of suggestive therapeutics, and not to teach patients to rely entirely upon the knife. I recently had another case illustrative of another type of disease. The patient became a confirmed hypochondriac upon the subject of the health of her pelvic organs. She had been under my observation for several years, and her talk was almost constantly of her ovaries and womb. She could not talk to a physician without getting upon the subject and would talk about it for an hour at a time. She went into the hands of a prominent gynecologist, who wisely refused to operate, but she was not so fortunate in the hands of another surgeon, who operated upon her with the result that she died on the third day. This was a clear case of a useless sacrifice of life. The patient had no condition of her pelvic organs which, in my opinion, justified such a serious operation. I do not see how under such circumstances an operation of a grave character can be justified for what is practically nothing in the world but a hypochondria, dependent just as much on brain-disorder as insanity is dependent upon brain-disorder.

Another aspect of the case is the fact that some serious nervous conditions may rise in cases of real pelvic disease. Thus a patient may undergo a perfectly proper operation, and may develop insanity as a result of it. I saw a lady several years ago suffering from melancholia, the result of hysterectomy. I believe that the hysterectomy, although justifiable, acted as the exciting cause upon a woman already neurotic. She had peculiar obsessions and believed that she had done wrong in submitting to the operation. The mere fact that this operation had been successful might lead others into it, in her opinion, and this weighed upon her morbid sense of responsibility to the extent of causing a pronounced melancholia so that it was necessary to send her to a hospital for the insane. Another type, and an important one, is the so-called confusional insanity. This may follow grave gynecological operations, just as it may the puerperium. Kraft-Ebing is disposed to attribute these insanities to the effect of the chloroform, ether, iodoform, and other substances used by surgeons, but I do not know that he is correct. The fact is, however, that these insanities occurring after operations, just the same as the form which occurs after childbirth, are probably due to some form of infection of the blood. There is some septic condition which is the primary disturbing cause in these cases to produce this insanity. The importance of this class of insanities is that they usually occur in the most unexpected cases, and cases which are operated upon under favorable circumstances occasionally develop this grave disease.

Remarks by

Barton Cooke Hirst, M.D.

Of all the lessons my work has taught me, I value none more highly than those which I have learned in the study of the pelvic organs of neurotic and neurasthenic women. I have had the good fortune for a number of years to examine many of the cases in the large neurological service of the Orthopedic Hospital, and by the kindness of Dr. Mitchell and of others, even a larger opportunity has been afforded me in consulting and in private practice to observe the relationship between nervous disorders and pelvic diseases in women.

I find that as the result of this experience certain propositions have formulated themselves in my mind to which I hold as valuable guides in practice.

(1) A neurasthenic woman, her family, or some one of her physicians will almost surely impute the nervous symptoms of the patient to disease of the sexual organs.

(2) A large majority of neurasthenic patients, I should say about four-fifths, give an entirely negative result on a pelvic examination, except for the ill-development of the sexual organs, which is such a constant accompaniment of a feeble nervous system in women.

(3) In a small minority of neurasthenic cases, the nervous disorders do seem to have had their origin in some pelvic lesion, and will slowly disappear when the pelvic disease is cured; but it is usually necessary to unite with the gynecological treatment a "rest cure," and if the cure of the pelvic disease is postponed too long it will have no influence whatever on the neurasthenia.

I believe that I can best explain what these propositions mean to me by citing a few illustrative cases with brief comments under each head.

Cases of Neurasthenia or Hysteria attributed to Pelvic Diseases that do not Exist.—Case of Miss S. Examined at the request of Dr. John K. Mitchell. Aged 25 years; difficult labor at her birth, and removed from her mother with forceps. Child in bad condition for twenty-four hours with a deeply indented head. A little more excitable and nervous than her sisters in early childhood. She has double inguinal hernia. She has two sisters who menstruated at the age of 13. She herself has never menstruated. Three maternal aunts never menstruated in their lives. They married, but never bore children. They each had double inguinal hernias. They were strong, hearty women without nervous manifestations. In this girl there have never been any menstrual molimina. There is a slight leucorrhea at odd

times; not regularly once a month. The girl herself thinks that there is always some leucorrhea, but there is no increase of it at regular intervals. Urination not abnormally frequent; bowels usually constipated. Many queer nervous manifestations and perverted ideas, which apparently reach the grade of insanity.

She had been told by a female physician that all her nervous symptoms were traceable to "womb-disease," and after a vaginal examination this physician told the patient and her family that the nervous disorders could be cured by local treatment of the womb.

Pelvic Examination.—The vagina is a rather shallow cul-de sac not an inch deep. No trace of cervix, womb, tubes, or ovaries in a combined rectal and abdominal examination.

Diagnosis. — Congenital absence of all the internal sexual organs.

It is scarcely necessary to add that there was no disease of the pelvic organs which could be held accountable for the girl's nervous disorders.

Dr. Mitchell tells me that the patient is rapidly improving under his treatment of her neurasthenia. There are two explanations for the physician's mistaken statement in this case. One is that she really believed the patient had some pelvic disease, and, firmly impressed with this idea, that she really thought she discovered what was in her mind during the vaginal examination. There is scarcely a week in which I am not called upon to correct such errors. If our discussion serves, even in some degree, to prevent these mistakes in general practice it will indeed serve a good purpose, for they have many and serious ill results. They injure the physician's reputation and lessen his influence. They fasten in the minds of hysterical women ideas that are extremely difficult to dislodge, but which must be dissipated before the hysteria can be cured; and they lead to injudicious and unnecessary local treatment that very often establishes an inflammatory pelvic disease which did not exist when the treatment was begun. All gynecologists of experience will agree with me, I think, that this is a widespread evil in medical practice, often with lamentable and sometimes even with fatal results.[1]

There is another possible explanation for the physician's conduct in the case just cited. She may have deliberately deceived the patient and her family for the large sum in the aggregate to be gained by a long-continued local treatment. I regret to say that occasion-

[1] I have seen in one week two cases of pyosalpinx, requiring abdominal section, that had their origin in unnecessary intrauterine treatment.

ally I encounter instances of such rascality invariably successful, for a time at least, with these most gullible of all patients,—hysterical women.

With your indulgence, Mr. President, I should like to describe one more instructive and typical case under my first heading,—that of a Miss S. I received some months ago a letter dated from a town in the interior of the State, from which the following extracts are made: "I am 41 years of age, have never been married, have been confined to bed seven and a half years with uterine troubles. I have displacement, flexion, and chronic inflammation, and much of the time acute inflammation. My stomach and bowels are very weak and trouble me very much. I had nervous prostration last April, and my nerves are still very weak and I tremble a great deal." "I am very debilitated and cannot sit up at all. I shall be obliged to stay in the hospital several weeks after my arrival, and the doctor advises me to have an operation." A few weeks later the patient arrived in the Howard Hospital. She told me it would be impossible to make a vaginal examination for three days, as she had used a very powerful astringent to keep up her womb on the journey, and that in consequence the vagina was so contracted it would not be possible to introduce even one finger for several days. I humored her whim and waited, meanwhile learning her history. From a long rambling account I recollect the following statements, made with the utmost conviction, and based, she said, on what her physicians had told her. Every time she stood erect or sat up, the womb turned upside down, and could only be replaced by her physician's manipulations. The womb was prolapsed and threatened to emerge from her body at any moment. It was bent on itself and was ulcerated. Her ovaries were diseased, and so was the bladder. Sometimes she could not hold water; at other times she could not pass it. She had been told and implicitly believed that nothing could cure her but the removal of the uterus and the ovaries.

I made a careful examination under ether of the pelvic organs, and of the bladder with an endoscope. Everything was perfectly normal and healthy, except that the sexual organs were ill-developed. On the following day, when I told the woman emphatically that there was nothing wrong with her but hysteria, she viewed me with the utmost resentment, and was as indignant as though I had taxed her unjustly with some disgraceful vice. She was at length persuaded, however, to transfer herself to the nervous ward in the hospital, under the care of Dr. John Madison Taylor, who finally sent her home in a condition best described by herself in the following brief extracts from a letter recently received: "I can walk all around

the house and wait upon myself." "I went to church yesterday and walked down the aisle without assistance. It was the first time I had been to church in eight years, and I could not have been more warmly welcomed if I had risen from the dead," etc.

During this woman's neurological treatment, she had several relapses to her old belief, and declared her conviction that she never could be cured without an operation.

One more illustrative case to show how little pelvic disease of a marked character may have to do with nervous symptoms that apparently depend upon it.

Mrs. B.; married three years; pregnant once; child, 1 year old; labor instrumental; puerperium normal. Sickness returned four weeks after delivery and has recurred regularly ever since, but the interval between the periods is five to six weeks, and the discharge is scanty. There has been severe pain in the back and left groin since the childbirth, which is worse just before the menstrual flow. There is constant and profuse leucorrhea. Shortly before she became impregnated, epilepsy appeared after she had been sick in bed with nervous prostration two weeks. The spasms have ordinarily returned once in two months since then, but have been sometimes absent as long as five months. They have almost always appeared with the severe pain in the groin and back that immediately preceded the menstrual flow, although rarely the spasms occurred independent of menstruation.

Examination.—Left tube greatly distended, infiltrated, and firmly adherent; ovary prolapsed, adherent in Douglas's pouch, enlarged and exquisitely sensitive.

Diagnosis.—Left-sided pyosalpinx. Operation recommended for the cure of the pelvic pain and disease with an idea that the epilepsy and other nervous disturbances would be benefited. Accordingly a large hydrosalpinx with dense adhesions and a diseased ovary were removed without special difficulty or complications.

Perfectly normal recovery from the operation with entire disappearance of all pelvic pain and the pain in the back, with gain in weight, and apparently a good effect upon the spirits, but the epilepsy in the year that has elapsed since the operation has become steadily worse, and the woman is now insane.

It is not necessary to dwell upon the last proposition, that occasionally the profoundest nervous disturbances appear to have had their origin in the long-continued, unceasing, and tormenting irritation of some pelvic lesion, and that they disappear when the pelvic disease is cured. Physicians, in general, are only too well aware of the fact and need no further instruction on it. It would be possible

under this head, to cite, from my own experience, some striking illustrative cases of reflex pains, of melancholia, of hystero-epilepsy, but it is unnecessary.[1] I feel that my small contribution to the study of the subject under discussion will be most useful if it conveys only the lesson that nervous disorders in women are to be explained usually *not* by pre-existing pelvic disease, but by a weakly organized nervous system unable to cope with the ordinary vicissitudes of life, or by some derangement of the nervous organism itself.

Remarks by

E. E. Montgomery, M.D.

Frequently in passing along the streets I observe a sign which reads, "One Cause and One Treatment for all Diseases." This is evidently a case of mature specialism. Charges are not unfrequently made against gynecologists that they refer all diseases of females to some disorder of the genital organs. The paper with which Dr. Hirst has opened this discussion shows that he is one who has recognized that disturbances of the pelvic organs are not the sole cause of nervous diseases. It is, however, important to recognize and determine the exact relation of nervous disorder to an existing pelvic lesion. Not unfrequently we find patients treated for pelvic lesions, in whom the symptoms are thereby aggravated, and the patient suffers as much from the treatment as from the disease. On the other hand, we find many cases who are subjected to rest treatment and without effective result, for the reason that there is a local lesion which manifests itself as soon as the patient resumes her normal relations. In some cases the returning symptoms would be aggravated. It has been my fortune to see a number of cases subjected to rest treatment for various neurotic conditions, in whom there have been found distinct pelvic lesions, such as pus-tubes, hydrosalpinx, laceration, or a retrodisplacement. This neglect of consideration of the pelvic lesions, however, seems to be more marked on the part of those who treat mental diseases. In many of the institutions for the treatment of the insane, the proper examination of the pelvic organs is neglected, often, possibly, for the reason that it is difficult to conduct them. While I would not for one moment claim that the

[1] I find occasionally in my consulting practice that the general practitioner makes the mistake of overlooking some pelvic lesion and of treating in vain the reflex nervous and other symptoms springing from it, but the opposite error, in my experience at least, is much more common. A safe course, making mistakes of both kinds impossible, would be to procure from a specialist a report of the pelvic condition in the case of every woman with obscure nervous or other symptoms, traceable in any way, or imputed by any one interested in the patient, to pelvic disease.

existence of increased nervous phenomena at the menstrual period is an absolute indication that the pelvic disease is a source of trouble, —for we recognize that all disorders are aggravated at that period, —yet I do feel that a woman suffering from mental disease is entitled to a careful examination, and where a lesion of the pelvis exists sufficient to justify treatment if she were sane, such a patient should have the benefit of the treatment, even though insane. One difficulty which we will have to combat is that the diseased condition has frequently existed so long that structural changes have taken place in the organs which were irritated in a reflex way originally. A case recently came under my observation, a woman who had been insane for two years had been confined in an insane asylum on account of her tendency to commit suicide. I saw this case in consultation with Dr. Chase, who informed me he was unable to find any central lesion of the nervous system as a cause. On examination it was found she had a fibroid tumor which filled up the pelvis. She was placed in a hospital, the uterus removed, and the insanity disappeared. For two years subsequently no mental symptoms were present. She was able to take care of herself and to enjoy life in comfort. A few months ago, however, she again developed mental derangement, became exceedingly melancholy, and declined to eat. Three weeks after the occurrence of this relapse she died. This, in my judgment, was a patient who should have had earlier treatment, and it is possible that more prompt relief would have saved the production of structural changes in her brain, which made her more susceptible to the recurrence of the disorder. Another patient came under my observation who had been insane for four years. The ovaries, which were quite large, inflamed, bound down, were removed. Three weeks after the operation her mental symptoms disappeared, and she found herself in as good health as she had been prior to its first occurrence. She was able to secure a position as matron of a public institution, which position she retained for a year. She then had a relapse, and, I believe, is still confined in the Norristown Asylum. Both these cases seem to me to illustrate the importance of early treatment of a local lesion. Its neglect, undoubtedly, had such an effect upon the brain as to produce changes which rendered the individual more susceptible to subsequent recurrence. In the consideration of these patients, then, I would again urge that every insane patient in whom symptoms exist which attract attention to the pelvis as a possible source or cause of the disease, should be subjected to examination. Where lesions exist of such a character as to demand treatment in sane patients, an attempt should be made to give relief, although they are insane. No patient, simply because she is insane, or has

an aggravation of her symptoms at the menstrual period without lesions, which can be demonstrated by physical examination, should be subjected to operation.

Remarks by

Charles P. Noble, M.D.

My experience bears out what has been said by Dr. Hirst, that there are many patients who are supposed to have disease of the sexual organs, who are suffering instead from diseases of the nervous system, or from imperfect development plus diseases of the nervous system. Arrested development is the fundamental cause of many cases of nervous diseases simulating diseases of the sexual organs in women. I have long observed that women having imperfect development of the sexual organs have an unstable nervous system, and that, as a rule, they are not vigorous or normal women. Many of them have had chlorosis in girlhood. Some years ago I sent several patients having imperfect development of the sexual organs to Dr. Harrison Allen, and was much interested to learn that there was an irregular and imperfect development of the organs of the throat and of the anatomical structures in general. It is hardly necessary to point out that cases belonging to this group should be treated by general measures. The proper time to treat such patients is when they are children and young women. By restricting their hours at school, by giving general tonics, by curing anemia, and, above all, by securing active exercise out-of-doors, much can be done to increase the development of such patients, and to restore them to approximately a normal condition. After maturity has been reached very much less can be accomplished. I have seen early marriage and maternity prove of great service in some cases, but in others no such desirable results have followed.

On the other hand, I have seen very marked functional disease of the nervous system cured by operations on the pelvic organs. In three cases, hystero-epilepsy, which had persisted in spite of treatment at the hands of neurologists, disappeared after the removal of diseased uterine appendages. These patients remain well, although several years have elapsed since the operation. I remember a typical case of a reflex neurosis cured by a perineal operation. The patient suffered from aggravated dyspeptic symptoms, which had resisted well-directed treatment. She had a moderate laceration of the perineum, and as a result an irritable condition of the levator muscle. The pelvic organs were well supported, because what was left of the levator muscle was doing excessive work. The conditions were entirely similar to those present in muscle strain as found in certain eye

conditions. After the restoration of the perineum, the reflex symptoms promptly disappeared, and this patient has remained well for several years. The case was well studied by her family physician, Dr. Radcliffe Cheston. I also know of cases of insane patients having pelvic disease, who were operated upon, and after the cure of the pelvic trouble the insanity disappeared.

Not intending to take part in this discussion, I have not looked up the records of my work, or I could add very much to what has been said. My experience with cases that have been in the hands of both gynecologists and neurologists has been very unsatisfactory. I remember seven cases having disease of the sexual organs with very marked nervous symptoms that were treated by the rest cure for months. None of these patients were in the least benefited, but were subsequently obliged to submit to operation. The position taken by many neurologists towards operations upon the sexual organs of women is unfortunate for the cure of this class of patients. Remarks prejudicial to operative treatment act by suggestion upon neurasthenic and hysterical patients. Our friends, the neurologists, should bear this in mind. In my opinion, the rule to guide the surgeon in cases having pelvic disease with nervous complications should be to operate upon all cases in which the disease threatens life or breaks down the general health, irrespective of the nervous symptoms. I have had no cause to regret this course myself, and, on the contrary, the nervous symptoms have improved with the gradual restoration of the patient's general health. On the other hand, when the local disease does not threaten life nor seriously interfere with the patient's comfort, it is best, if possible, to improve or cure the nervous complications before resorting to operation. It is well to call attention to the fact that the neurologists see only a small percentage of operative cases, and that their views on the whole subject are apt to be tinctured by the small and exceptional class which come under their observation. It would be as logical to judge of a man's success in practice by considering only patients that have been treated by him who consulted other physicians,—that is, to consider only the failures, the partial successes, or the evidence of patients that have for one reason or other been dissatisfied,—and to leave out of consideration entirely the very much larger percentage of cases who are entirely satisfied with the results of treatment, and hence do not consult other medical men. It seems to me that this method of arriving at conclusions has been followed by some of our neurologists.

Remarks by

George Erety Shoemaker, M.D.

There are no patients more difficult to deal with satisfactorily than the representatives of the great middle class who come from the small country towns with marked hysterical and neurasthenic conditions combined with pelvic diseases. I take it for granted that reputable gynecologists are not given to removing healthy organs for nervous symptoms or for pain only. The problem which presents itself, especially in the class of cases to which I have referred, who cannot live a life of idleness, is how to cure the patient, and this demands much thought. I frequently hear men say in reproach of surgeons that such and such a patient has had her ovaries removed; that she is very decidedly hysterical or neurasthenic, and that any man should have known that the removal of the ovaries would not cure her. It seems to me to be forgotten by such a critic that there is no evidence whatever in his hands that the ovaries were not seriously diseased, and that there was not present a neoplasm, and that the operation was not undertaken as simply one factor in endeavoring to cure the case. When these nervous cases come to us and we find that there is a minor pelvic lesion, we know that if we put them to bed, give them massage, electricity, and forced feeding, we will practically cure them *for the time being*. Many such patients are discharged from hospitals marked "cured," who go home with their pelvic lesion unchanged; while the mere resumption of the upright position and the old habits of life, including the irritation of the displaced uterus or the moderately inflamed tube or appendix, will put the patient where she was before. A man is false to his trust who does not endeavor to cure his patient permanently; but it by no means follows, as seems to be inferred by some men, that oöphorectomy should be done. Frequent criticism is made as to the size of the specimen on the table after an operation. In some cases where the removal of the appendix or tube seems to result in the removal of a very small specimen, the observer loses sight of the great importance of the organized inflammatory infiltration which surrounded this organ, and that it may have been the starting-point for attacks of localized peritonitis which have for years kept up the invalid state. A testicle incarcerated in the inguinal canal may require removal just as much when small as when large. Varicocele causes hypochondria in men at times, but only because it is a disease of the sexual apparatus, and not because it is large. The necessity for the removal of an appendix destroyed by inflammation rests not upon the size of the appendix, but upon its condition.

When a case presents itself with an important lesion, a conscientious man is obliged to try to remove it. Among the hopeful methods in modern gynecology is the permanent cure of those retroversions which cause trouble. If these are simple, no treatment is necessary, but if they are complicated, something must be done. One of the most important things to secure is the restoration of the ability to take exercise. Patients will often become comfortable under passive exercise and rest; but they must be put in a position where they can take exercise by themselves, or they will not remain either comfortable or free from nerve symptoms. Inability to take exercise without suffering at every step or from every jar in street-car riding, tends to keep up the idea in the patient's mind that she is suffering from some important disease, although you may assure her that she has no disease until the end of time. Hence arises the necessity for the cure of inflammatory conditions in bladder, uterus, tubes, ovaries. Where an infected tube or ovary has become the focus from which start repeated attacks of pelvic peritonitis this focus must be removed, regardless of its size, yet how many physicians who *never examine their cases* will treat such conditions for supposed ovarian neuralgia or neurasthenia, diagnosing the inflammatory attack itself as typhoid fever of obscure type, or as suspected tuberculosis. It is useless to attempt to cure cases of this kind, unless minor in degree and recent in origin, by rest alone, with or without the use of suggestion and a high type of moral instruction. When they resume their old life, which usually includes much stair-climbing and the care of children, their old troubles return, the real aches soon breed a large progeny of false aches, and within a year the patient is as bad as ever,—a nervous wreck, peevish, hysterical, helpless. What such a patient needs is never double oöphorectomy of sound organs for the sake of inducing the menopause and abolishing dysmenorrhea. She needs careful, intelligent treatment of the organs which are diseased, with possibly the surgical removal of tissue hopelessly diseased; but, above all, every effort must be made to preserve or restore her natural functions, and to disabuse the mind of the idea that there is any ovarian or uterine trouble. This last can only be done by making her comfortable. If after the first examination no disease is found all local treatment must be carefully avoided, and the case then treated along general lines, just as aches or pains in any other part of the body would be treated. Here lies the remedy for "rest treatment" and suggestion.

Frequently patients will state that they have been told by an operator that their ovaries must come out, when no such statement has been made. This is a matter of experience which every surgeon

can appreciate. A most cautiously guarded preliminary opinion, if it includes the suggestion that treatment may fail to cure a diseased condition, after which the question of operation would have to be considered, is a verdict in the minds of many a thoughtless patient. The writer recently performed hysterectomy for cancer on a patient who casually told him that a distinguished neurologist, a Fellow of this college, had told her that she had cancer of the liver *six years ago*. Not only did he not say so, but I did not believe that he did. Yet I have heard that gentleman condemn, unheard and unknown, some surgeon who had operated on a nervous case, taking it for granted that the surgeon had overlooked the true character of the disease.

This same case of hysterectomy for cancer is 60 years old, and has had periods of mental depression almost amounting to hypochondria, with habit of wandering off unexpectedly from a nameless unrest and desire to "go away from herself." These symptoms antedated her operation, from which she is just recovering. I have never told her that she had cancer, to save the mental effect. I venture to prophesy, however, that if she does not die too soon from recurrence of the growth, she will fall into the hands of a neurologist for those nervous symptoms, and that he will be an unusually charitable man if he does not discover in her a new example of serious mental disease caused by removal of the sexual organs. He may even suppose that the hysterectomy was done for the hypochondria, if he admits this preceded the operation. My own opinion he will never know, which is, that the physician who would allow his patient to bleed excessively for fifteen years from a benign growth, as in this case, with all the mental agony and dread of cancer that the patient says she has endured, is responsible for the hypochondria, if not for the malignant disease finally engrafted on the benign.

Many patients with grave hysterical conditions have been restored to health by the removal of pelvic disease at my hands, followed by other treatment. There are many grateful letters now in my possession testifying to their recovery. The operations were never done to cure organic nerve lesions, nor were they ever normal oöphorectomy, but they have been done to remove tumors, to take away pus-sacs, to hold up diseased uteri, or, in other words, to remove some active factor which had either undermined the patient's vitality by sepsis, bleeding, or constant irritation, or which had prevented her taking the exercise necessary for the health of the nervous system. Where actual disease of the sexual apparatus is present, it seems hard to overlook the enormous mental effect, and the causal relation through a chain of correlated factors, such as worry, sedentary life,

constipation, lithemia, and the like, with many of the neurasthenic conditions so common in women of the present day.

Remarks by

James Tyson, M.D.

Being requested to speak on the subject under discussion from the stand-point of general medicine, I infer that it is expected I shall consider the consequential effect of pelvic disease on disease of different organs through the nervous system. It seemed to me that there was but one way in which I could do this with any expectation of adding to the discussion, viz., by reporting briefly one or more cases bearing on it. It so happens that three such cases have recently been under my care, in all of which, however, the reflex symptoms bore on one set of organs only,—the digestive.

The first case was a handsome married woman, 37 years old, who consulted me in midsummer for severe headache associated with gastric symptoms, including nausea and even vomiting with epigastric distress, flatulent distention, and constipation. These symptoms had existed for some time. Before seeing me she consulted an accomplished gynecologist, who discovered a double pyosalpinx. Early in July both ovaries and Fallopian tubes were removed. She made a good recovery after the operation, but her dyspeptic symptoms remained altogether unrelieved. It was on this account that she consulted me. While the operation was amply justified by other causes and was done on account of them, it was fondly hoped that it would also remove the symptoms described. The hopes were unfounded, and she continued to suffer just as before. The case proved to be an obstinate one, but yielded after a time to remedies which depleted the upper alimentary canal and liver. Among these, morning doses of Carlsbad salt in hot water were conspicuous. She was not, however, thoroughly cured when I last saw her, some time since.

Another patient was a woman of 34 years; married at the age of 20. During the first five years of her married life she bore three children at full term, and had one miscarriage. In the birth of her first child she was badly lacerated. For ten years she has suffered from indigestion. Her appetite was capricious, sometimes enormous, at others she had none at all. At other times she craved certain kinds of food. She had acid eructations and suffered from flatulence. She had dull, aching pain some hours after a meal, when her stomach was empty. It was not relieved, rather aggravated, by taking food. She was relieved, on the other hand, by

vomiting. The pain beginning in the epigastrium, passed up the left side of the chest and sometimes to the back between the scapulæ. She has been subject, of late years, to what she calls "nervous spells." They occur under any circumstances; it may be in church or in the street. Also at times as an apparent consequence of prolonged fasting, practised because of the discomfort occasioned by taking food, which she puts off on this account as long as possible. They are characterized by faintness and pallor, but she does not lose consciousness. In January, 1896, she began to use the stomach-tube, and obtaining great relief thereby has practised its use ever since.

In October, she was admitted to Dr. Charles B. Penrose's ward on account of the pelvic disease, and on the 20th the cervix was amputated. After recovery from the operation she was transferred to the medical ward for treatment of the dyspeptic symptoms. An examination after a test-meal discovered a deficiency of hydrochloric acid, so that the acidity from which he suffered was probably due to organic acids. There was no dilatation of the stomach.

A third case bearing on this subject is that of a young married woman of 27 years, who has never had children. When 15 years old she had a first attack of rheumatism, and had another each year for three years in succession. She suffered from what she called ovarian trouble since she was 16 years old, for which she was treated at the Woman's Hospital six years ago,—that is, when 22 years of age. She also suffered from an annual attack of malaria for several years, having had the last about five years ago. For three years previous to admission to the University Hospital, in December 1896, she suffered from dyspepsia, but since May the symptoms have been much worse. They include severe and almost constant pain, which begins in the epigastrium near the left costal border and extends thence upward towards the left breast and around under the angle of the left scapula, probably due to flatulence. Up to a month ago there was frequent regurgitation of food immediately after eating. Her appetite is poor and she is inclined to constipation. A peculiar symptom is a "nervous catch," consisting in a sudden contraction of the muscles of the lower thorax and abdomen, more frequent when she is excited.

On December 4, 1896, Professor Penrose removed both ovaries and did the operation of ventrofixation of the uterus. She made a good recovery after this operation; but the dyspeptic symptoms continuing, she was transferred to the medical wards. She was thoroughly examined, her hemoglobin measured, and blood-corpuscles counted; the former being found 60 per cent., and the latter 3,750,000. Both were, therefore, slightly lowered. Analysis of the gastric contents after a

test meal showed slightly-reduced hydrochloric acid, but digestion was completed within the normal limit. There was no dilatation of the stomach. All of the old symptoms continued, and after a trial of a great variety of forms of treatment she was discharged in much the same condition as that in which she was admitted.

Thus there came under my care three cases in comparatively rapid succession in which marked digestive symptoms were associated with pelvic disease, which might reasonably be held responsible for them. Yet a thorough cure of the pelvic disease failed to relieve the digestive symptoms. I would not have it thought that because I adduce these cases I deny all causal relation between pelvic disease and disease elsewhere, a relation commonly characterized as reflex. On the other hand, I believe such relation exists. Yet they show clearly that the two conditions may exist independently of each other.

From such cases as these reported, however, we learn, first, that, given the association of pelvic disease and disease elsewhere, too much must not be promised in the way of relief to the latter as likely to follow operative or other cure of the pelvic disease.

Second, we are not justified in recommending operative treatment for pelvic disease only. My cases show that such expectations may be sadly disappointed. *In none of the cases reported was the operation done for the dyspeptic symptoms. It was justified by the pelvic disease itself, and done on account of it.*

Third, that the seeming reflex affection should be thoroughly studied independently of the pelvic disease, which is suspected to be responsible for it. Thus, in the case of the stomach, a careful study should be made of its physical state, of the quantity of its secretion, and the physiological activity of the latter, and of the motor and absorbing capability of the organ. Often, doubtless, in shortcomings of these will be found an explanation of the symptoms which may be corrected by their removal.

Remarks by

James M. Anders, M.D.

I regret that I did not hear the discussion from the beginning, but I infer from what Dr. Meigs has just said that the weight of opinion of those who have spoken was against the notion that nervous disorders are frequently dependent upon pelvic disease. The question under discussion presents aspects that are but little less interesting to the general practitioner than to the neurologist or the gynecologist.

Obviously, the general practitioner's view of the subject is more limited than that of the specialist; but, on the other hand, the

latter, in order to understand all the reflex symptoms due to pelvic disease, must encroach upon the domain of general medicine. To discriminate the symptoms due to pelvic disease and presented by the lungs, heart, and stomach, from symptoms quite similar in character but due to causes residing outside the pelvis, several points must be established. In the first place, one must determine whether the particular organ presenting the symptoms does not show some pathological change. If it does not, the general practitioner should, before ascribing the phenomena to pelvic lesions, look elsewhere for the immediate exciting cause. Take the heart as an example. The subjective symptoms of all forms of functional and organic disease of this organ may be counterfeited by reflex symptoms occasioned by irritation in the uterus and its adnexa. By a careful physical examination, however, we are able to determine the presence or absence of structural disease. If the case be found to be functional in nature, we should think of the possibility of its origin being in the pelvis, but the general practitioner should, before so deciding, eliminate every other known cause. The important fact has been brought out by the report of one of Dr. Tyson's cases that removal of the original pelvic cause often fails to cure a reflex neurosis. This fact makes many of the cases particularly puzzling.

The cardiac disturbances most commonly met with are palpitation, a rhythmia, and pseudo-angina pectoris. A rare condition is tachycardia, and I recall a case which developed about one year before the menopause. The attacks occurred regularly with the menses, but since menstruation ceased they have recurred at irregular and much longer intervals.

The lungs are sometimes the seat of reflex disturbances, and the most familiar example is asthma.

There is a small class of cases which presents the subjective features of an intense bronchial irritation, occurring either from time to time or undergoing marked aggravations and ameliorations. A dry, harsh, and very troublesome cough is present, which seems often to be dependent upon the congestion attendant upon menstruation. The patient thinks that the exacerbations are due to catching cold, but close observation shows that they are closely connected with the uterine congestion. The physical signs are absolutely negative. Hysteria may or may not be associated. It is important that this class of case be recognized, since, as I have learned from personal experience, remedies directed to the bronchial mucosa are not curative, but are often followed by temporary relief only. Whether all of these patients would be cured by attention to the pelvic condition is doubtful.

The stomach is sometimes the seat of hystero-neuroses of reflex uterine origin, and the symptoms that I have observed most frequently are more or less gaseous distention of the stomach and intestine, nausea, and vomiting. In some of the instances cardiac palpitation is associated; in others cramp-like abdominal pains. We have a very small class of cases in which the subjective symptoms and physical signs are identical with those of chronic dyspepsia. But if we analyze the gastric contents, as I have done in two cases, we shall find them normal. Neither does the fasting stomach contain anything abnormal. Symptoms pointing to pelvic lesion are usually present, but may be trivial indeed. The question of the relation of pelvic disease to nervous disorders has another side,—a fact which has been decisively emphasized to-night. Pelvic disorders, both functional and organic, may be secondary to strong emotional disturbance, including the nervous shocks occasioned by intense grief, violent passion, great joy, and the like. Analogous disorders of function and of nutrition in other organs of the body are constantly being witnessed by the general practitioner. This side of the subject is quite as important as the one to which I first invited attention and dwelt upon, but to discuss it fully would lead me too far.

Remarks by

Solomon Solis-Cohen, M.D.

In connection with the subject before the college, we desire to submit the following report of a case under the surgical care of Dr. Steinbach and the medical care of Dr. Cohen, and in which we invited the assistance and counsel of Dr. Weir Mitchell, who kindly permits us to quote his opinion.

The case is one of mental, or rather moral, disorder (kleptomania) in an hysterical woman, the subject of chronic uterine and rectal disease. It is of some interest from the stand-point of medical jurisprudence, as the unfortunate patient was proceeded against legally in England, and having by advice of counsel submitted a plea of guilty of larceny, received a severe sentence of imprisonment; being liberated, however, through the interference of the Home Secretary, upon the medical testimony submitted. Her husband being an American citizen of high reputation, the good offices of the American embassy were used in her behalf, and the case at the time excited considerable attention in the public prints.

Upon Mrs. C.'s liberation, husband and wife sailed for home, and, before proceeding to the western city in which they reside, came to Philadelphia for the purpose of consulting Dr. Steinbach, who saw

the patient for the first time on November 29, two days after she had landed from England. The next day he made a careful examination.

He found that the uterus was hypertrophied to one and a half times its normal size; the mucous membrane was irregularly roughened and bled on the slightest touch by the sound. The cervix had a bilateral laceration, more extensive on the left side. The tear was well cicatrized. The rectum was found to be fissured below, ulcerated above. There were evidences of former ulcers that had cicatrized and several large turgescent arterio-venous varicosities (hemorrhoids) which bled freely. Dr. Steinbach advised removal of the patient to the Polyclinic Hospital, where, after preparatory treatment for a few days, the patient was anesthetized with ether, the sphincter ani dilated, the fissures cauterized with a Paquelin thermo-cautery, the ulcers treated likewise, and the hemorrhoids clamped and cauterized.

The uterus was curetted and then the trachelorrhaphy performed by denudation of the cicatricial tissue and suturing with silkworm gut. The patient subsequent to the operation complained of discomfort to a greater extent than is usual with those undergoing similar treatment. The temperature remained normal throughout convalescence.

Before operation and subsequently, upon various examinations by Drs. Mitchell and Cohen in consultation with Dr. Steinbach, a history was gradually obtained substantially and succinctly as follows:

The patient is 34 years of age, and has been married eleven years. She has had one child, 10 years old, and no other pregnancy. During pregnancy she suffered much from hemorrhoids, and was operated upon, and since then has been subject to prolapse of the rectum, at times causing much distress.

Previous to fifteen months ago she had suffered little from dysmenorrhea. The menstrual flow was excessive, but otherwise normal. She had never been accustomed to rest during menstruation, although she would often faint on going into a warm room or being excited at this time. About fifteen months ago, following a wetting during menstruation, the flow ceased, and the patient was confined to bed for some days with headache and feverish symptoms. Since then there had been no real menstrual flow; there was more or less offensive discharge at irregular times, and after two or three months a slight wetting of the diaper at what should have been the menstrual period. For some days preceding this there was considerable pain in the back and abdomen, the patient showed great nervous irritability and excitement, and the tendency to headache and to fainting became exaggerated. The patient was at times subject to palpitation of the heart.

Inquiry into the patient's mode of life showed that she had been

ever "on the go," her day being one of excitement rather than mental occupation. She had always been fond of social pleasures and of shopping, but her husband, though by no means so wealthy as report declares, has been fully able to gratify her in these respects without any necessity for her to resort to larceny.

In person, Mrs. C. is of medium height, somewhat fleshy but of good form, the skin is fair and smooth, the muscles well developed though somewhat flabby. The cheeks are constantly flushed, the left face is moved less than the right, this difference being easily observed; the eyes are roving and restless. In London (the husband states) she heard voices and would go to the door to listen. Later these were also heard at night. She was born with some foot trouble, walked at 5 years, and wore irons.

Dr. Cohen found no disease of the heart or lungs, although the second sound of the heart was somewhat accentuated, and the patient exhibited the familiar signs of vasomotor instability. Digestion was normal. Nothing pathologic was detected by either of us in the urine. At our request Dr. D. D. Stewart also carefully examined the urine, with the result of finding it practically a typically normal fluid; the quantity which had been scanty just after the operation having increased at the time of our examination to 1200 cubic centimetres in twenty-four hours during rest.

Concerning the offence for which the patient was prosecuted in England, it is unnecessary to enter into details further than to say that through sending to a shop to be matched an article which had been abstracted from that very place, and to which the price mark remained attached, suspicion was aroused, and various articles, some of value, some of no value, and many for which she could have no possible use (including a toasting-iron, some common towels, and plated spoons marked with the name of a hotel on the continent), were found in the patient's trunk. She was, therefore, arrested and brought to trial, with the result stated.

The husband consulted Dr. G. H. Savage, Dr. L. M. Gabriel, and Dr. W. C. Grigg, who united in the opinion that she was mentally and morally irresponsible for the offence, and that the exciting cause of her mental unbalancing was uterine disease with aggravation from the condition of the rectum. Dr. Savage concludes his opinion by saying, "I am used to seeing cases of so-called kleptomania. They are not uncommon among people, more particularly women, belonging to the upper and middle classes. They are commonly met with in women who have some uterine trouble, which might lead to hysteria or allied nervous troubles. The characteristics of the disorder are chiefly seen in the unreasonable nature of the acts, things of various

value and interest being taken, and the risk of detection run being out of all proportion to the value of the goods taken. I do not think that Mrs. C. had reasonable knowledge of the acts of which she was accused, and I believe she would suffer seriously from detention in a prison or asylum. She is of the class to which kleptomaniacs belong, and one must not expect to find other signs of insanity in her."

Dr. Gabriel testified that he had seen the patient some six months previously, shortly after her arrival in England; that she was then suffering from frequent attacks of headache and irregularity and scantiness of the menstrual flow; that she was extremely neurotic, and that he had then advised rest and freedom from excitement.

Dr. Grigg's opinion was substantially the same as those quoted above. He likewise says, "I should mention that on the 3d of November, when I last saw Mrs. C., her monthly period had commenced. This would point to the fact that at the time she took the articles charged in the indictments,—namely, between the 30th of September and the 5th of October,—she must have been going through her monthly period, at which time her illness would be most likely to cause mental disturbance." In a letter to Dr. Steinbach he describes the uterine conditions as follows: "The fundus is extremely tender; by conjoint examination, the cervix and body as far as one can reach under these circumstances, very hard (a tear on the left side of the os), indicating to my mind some previous inflammation of these organs.

"The uterine sound passes four and a quarter inches, the fundus of the uterus is irregular, and in some parts rough and nodular. It is very sensitive to the touch, producing considerable pain, which continues for many hours. There is slight hemorrhage, although great care was taken in making the exploration. She has also a constant offensive discharge. She will inform you that for the last twelve months, in consequence of severe wetting during menstruation, she has had a very slight loss at these times. I saw the diapers and verify to the truth of these statements. As she could not remain in England for proper treatment, I have advised Mr. C. to consult you."

In his testimony submitted to the Home Secretary, he adds, "She is intensely neurotic. The condition of things—a disease of the upper portion of the uterus—is a very common accompaniment of various forms of mania in women, such as melancholia, religious mania, nymphomania, and I have seen it in several cases of kleptomania. It is invariably coupled with much mental disturbance. The condition I discovered is quite sufficient to account for any form of mental vagaries which are so well known to affect a certain class of women (neurotic) with disordered menstruation. Her bowel condition would aggravate this."

In explanation of the plea of guilty entered at the trial in England, Mr. C. stated that it was by advice of counsel, as a successful defence under the plea of kleptomania would have necessitated the immediate commitment of his wife to an asylum for the insane, and the physicians whom he consulted were of the opinion that this would tend to aggravate rather than relieve her mental disorder.

The facts given above are sufficient to show the main points upon which Dr. Mitchell has based his analysis of the mental phenomena of this case, with which it is almost superfluous to state that we are in complete concurrence.

The following extracts are taken from Dr. Mitchell's opinion:

"January 20, 1897.—I have carefully examined Mrs. C., and have considered the papers which bear upon her case. I have also had a long talk with her, with her husband, with the physician and surgeon who have had her in more immediate charge, and I have read the report of the English experts; also, I have had the advantage of reading the newspaper cuttings, giving the details of the trial, and I have read the Home Secretary's order for her release.

"It is clear to me that Mrs. C. has, for some time, been in the habit of taking objects of no use and of little or great value. . . . It is known that for these thefts there was no excuse, as she has been reasonably supplied with money for a person in her condition of life.

"I do not believe that Mrs. C. had any clear notion of the nature of her acts, or of their consequences, and I am of opinion that very positive and long-neglected uterine and rectal disease had much to do with the disorder of mind from which she has suffered, and which is apt to be associated with hysterical conditions. . . .

"Had I been in England at the time of trial, I should not have agreed with the lawyer as to her plea. In my opinion she should have pleaded insanity, accepted the commitment to an insane asylum for two or three months, and been released therefrom. She is now under a stigma, from which it will be difficult to escape,—that of having pleaded guilty. This involves long explanations; the plea of insanity would have involved none. . . .

"I think her hysterical, weak, and unbalanced, but not criminal. It is characteristic of her form of mental disorder that she should show no other obvious signs of insanity than the overwhelming tendency which belongs to her form of monomania."

The surgical treatment of the case has already been described. The medical treatment consisted simply in rest, nourishment, and massage.

The menses appeared on December 10, and ceased four days later, reappearing in due time, and again lasting four days. The flow

seemed normal in character and quantity. The patient had left the hospital on December 28, and the course of treatment above outlined was then continued for some three weeks at the home of her sister.

On January 25 she left Philadelphia for her home, apparently perfectly recovered physically, and with these symptoms of mental improvement that, whereas when first seen she seemed rather to enjoy the excitement of the doctors' visits and questioning, *pari passu* with her physical improvement there seemed to develop abashment, if not shame; and contrition for the acts was added to the regret for the trouble brought upon her husband, which had previously seemed to be her only cause of grief.

To the purely scientific account of this case and in explanation of our departure from usual reserve, it seems proper to add that this full and frank report of a case easy to identify has been made with the concurrence, and, indeed, at the wish of the patient's husband. Although subjected in both the secular and medical press to harsh and unmerited criticism, he has by our advice refrained, as have we, from stating to the many newspaper men who have sought interviews the facts that amply justify him, as well as the physicians who testified to the British Home Secretary concerning the patient's condition, and the friends who interested themselves in her and his behalf; and furnish a complete reply to the remarks attributed to the trial justice.

This communication, however, places the material facts upon record in a becoming manner, so that if necessity should arise they may be referred to for any proper purpose.

They seem to us more than sufficient to show how baseless and cruel were many of the comments upon the case and upon the plea of kleptomania that appeared in certain medical journals; and to suggest that even trial justices might do wisely in withholding opinions upon matters concerning which they are uninstructed or without knowledge of all the facts.

Finally, acknowledgment should be made of the courteous deference to our wishes by the representatives of the press, upon explanation of the ethical reasons for withholding the information they sought.

DISCUSSION.

Arthur V. Meigs, M.D.—All that I might have said has already been so much better said than it would be possible for me to say it that I shall not take the risk of repeating. I merely wish to add my testimony to what is the prevailing sentiment as it has been expressed by the Fellows who have spoken, that more nervous dis-

orders have been attributed to pelvic disease than can really be shown to be due to that cause, and that many operations have been performed in the past that had better been left undone.

S. Weir Mitchell, M.D.—I beg to say to Dr. Shoemaker that no one ought to expect rest treatment to do everything for everybody. No one thinks that this is the way to use the rest treatment. I constantly feel it necessary to have pelvic examinations made of women before they finally leave our hands, and of course do so.

I am quite sure that the success of surgical operations would be far greater if the women had had previous rest treatment, as I have observed, when a grave operation follows this treatment, that the patient gets well sooner. I can produce detailed notes of some cases in which Sims and Goodell declared that the ovaries must be removed and yet every one of these cases were subsequently cured by the rest treatment. Four of them, two of whom were sisters, have since married and have had children. Dr. Montgomery states that the insanity in one of his cases was cleared up within three weeks after the operation. In melancholia, and in some other forms of insanity, however, it is not rare to find the trouble cease after an operation. I have in mind a case which apparently got well immediately after an operation for removal of the breast. Another case of profound melancholia with a tendency to commit suicide, apparently made immediate recovery after operation for hemorrhoids, and has had since then no sign of the grave trouble which pre existed.

The Diagnosis of Commencing Ascites.

L. Alpago-Novello (*Gazz. med. di Torino*, No. 21, 1896; *Centralblatt für innere Medicin*, No. 41, 1896) advocates the knee-elbow posture of the patient to facilitate the diagnosis of commencing ascites. In this position the free fluid in the peritoneal cavity collects about the umbilicus as being the most dependent portion, and is readily recognizable by dulness on percussion. In this way small collections of fluid may be detected, collections so small as to otherwise be unrecognizable.

GONORRHEAL ENDOCARDITIS.[1]

By Alfred Stengel, M.D.,

Philadelphia.

The liability of the endocardium to suffer acute inflammation in the course of gonorrhea has been considerably discussed of late, though the subject is by no means new. Trousseau[2] took occasion as early as 1854 to deny the possibility of gonorrheal endocarditis, while Brandes[3] the same year described two cases. Subsequently Hervieux (1858), Lorain (1866), Tixier (1866), Voelker (1868), Lacassagne (1872), Marty (1876), Pfuhl (1878), Morel (1878), Träger (1880), Schedler and Leyden (1880 and 1882), Martin (1882), Dérignac (1884), Fraser (1885), von der Velden (1887), Weckerle (1886), Rothmund (1889), Genzinsery (1889) add reports of cases observed during life or post mortem, or discussed the question in a general manner. Interest, however, has recently been revived by the reports and dissertations of His (1892), Leyden, Wilms, Souplet, Councilman (1893), Fressel (1894), Litten (1895), Thayer and Blumer (1895), and Dauber and Borst (1896).

The older writers, in discussing the relation of gonorrhea to endocarditis, were, for the most part, guided by clinical observations. Doubtless in some of these endocarditis was not present, and in cases in which it was certainly determined much question may exist as to the time of onset,—whether it began acutely, as alleged, or whether it had been present, but unsuspected, previous to the gonorrhea. Suspicion would seem to have rested upon gonorrhea as a cause of endocarditis mainly on account of the frequent occurrence of arthritis in that disease. Still, some of the first writers pointed out that joint-disease might or might not intervene between the attack of gonorrhea and the cardiac affection. Thus Morel, in his dissertation in which thirteen cases are collected, contended that, though gonorrheal rheumatism may be the intermediate affection between gonorrhea and endocarditis, this does not always occur; and Genzinsery, after a study of thirty-one collected cases, concludes that (1) both endocarditis and pericarditis may occur; (2) there may or may not be rheumatic affection of the joints; (3) the disease manifests itself like ulcerative endocarditis, and tends to heart-failure.

A study of these older cases establish that endocarditis may

[1] Read before the College of Physicians of Philadelphia, May 6, 1896. Several later cases have been added.

[2] Gazette des Hôpitaux, 1854, p. 226.

[3] Archives de Médecine, 1854.

occur in the course of gonorrhea, but the nature and cause of the endocarditis could not be determined. After the discovery of the micro-organism peculiar to the disease by Neisser, and particularly after the discovery of accurate methods of studying this organism, the problem has been made somewhat more simple. In the first place, it has been shown that the gonococcus at times occasions metastatic lesions in the joints, the serous cavities, and the solid tissues and organs; in the second place, it has been shown that the gonococcus may occur in the vegetations of endocarditis. We leave out of consideration the lesions which may be considered as occurring by direct extension of the infection along the mucous tracts or otherwise.

Arthritis.—Experimental and bacteriological studies have now abundantly proved that arthritis may be due to the direct action of the gonococcus.

Neisser and Shäffer have recently summarized the contributions,[1] and I extract the following: Petrone, in 1883, and Kammerer, in 1884, found diplococci in the fluid drawn from arthritic joints, the bacteria in question having the morphological characters of gonococci. Deutschmann, in 1890, found diplococci in the knee-joint, and established the probable nature of these by the morphology and staining reactions and by their failure to grow upon ordinary media. Lindemann cultivated the organisms from the joints after the method of Werthheim, though his cultures were impure. Hock, E. Neisser, Respighi and Burci, Burdoni-Uffreduzzi, Finger, and Kickow have since obtained positive results. It must be confessed that other cases carefully studied have failed to reveal gonococci, but this does not remove the value of the positive results obtained.

Synovial Membranes.—Similar results have been obtained in the study of the synovial sheaths of tendons. Tollemer and Macaigne found diplococci (probably gonococci) in a case of tenosynovitis of the forearm, and Jacoby found in the pus of a tendon sheath diplococci which stained like gonococci and refused to grow upon ordinary media. Flexner and Bloodgood (quoted from verbal communication to Thayer and Blumer) have recently obtained pure cultures from a similar case.

Pleura.—Mazza found gonococci in the pleural exudate of a case of gonorrhea in a girl of 11 years, in which arthritis, pericarditis, and endocarditis occurred. The cultures were made after Werthheim's method.

Meninges.—Cases of involvement of the meninges (meningitis and meningo-myelitis), of general septicemia, and of various eruptions

[1] Ergebnisse der Allgemeine Aetiologie, Lubarsch und Ostertag, 1896.

in the skin have been reported, but demonstrations of the micro-organisms are wanting.

Horwitz reported a case of subcutaneous abscess from Professor Lang's clinic. Gonococci were found and obtained in culture by Paltauf.

The absence of gonococci in the pus of lymphatic buboes may be due to the fact that such lesions are due to other causes, or that the gonococcus rapidly disappears. It is unnecessary for my present purpose to discuss this question at length. The positive results obtained in the case of diseases of various serous membranes, and in one case at least in a subcutaneous abscess, are sufficient to establish the fact that this organism sometimes gains access to the circulation and occasions metastatic lesions. It is, therefore, altogether probable that gonorrheal endocarditis may occasionally occur.

The following case came under my own observation post mortem. The history and post-mortem study are given as minutely as possible.

Lillian D., a young woman, aged 20 years, was brought to the German Hospital, October 12, 1895, and was placed under the care of Dr. Lawrence Wolff, to whom I am indebted for the permission to publish the case. The following history was obtained:

The patient's father died of phthisis at 34 years. Her mother is still living and well. The patient had neither brothers nor sisters.

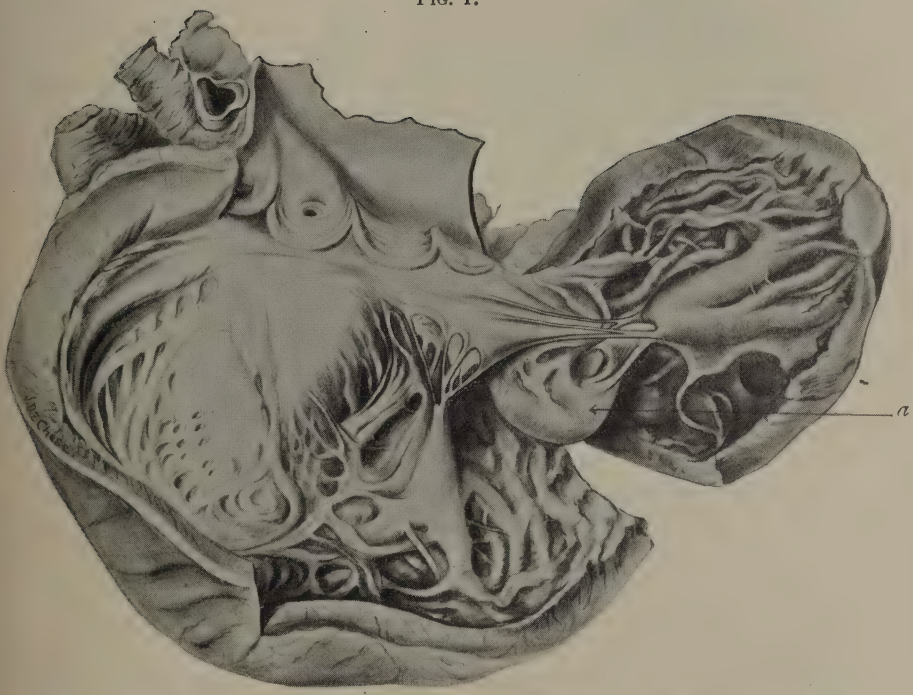
She herself had most of the diseases of childhood, including scarlet fever, measles, diphtheria, and mumps. At the age of 7 she had a severe attack of inflammatory rheumatism, and is said to have developed "heart-disease" at that time. The illness lasted about two months, and the convalescence was slow and protracted. About two years later she was ill again, and was told that she had typhoid fever, but the illness lasted only two weeks, and she does not now recall any of the symptoms.

From this date (when she was 9 years old) until the present time she has been well, excepting that her heart has troubled her greatly at times. Palpitations and dyspnea were frequent and easily provoked, but she never suffered with marked rupture of compensation.

A year before her admission to the hospital the patient had begun to have intercourse with a man, and soon developed a distinct and characteristic discharge. She was treated for this, but the discharge continued and was still present when she entered the hospital.

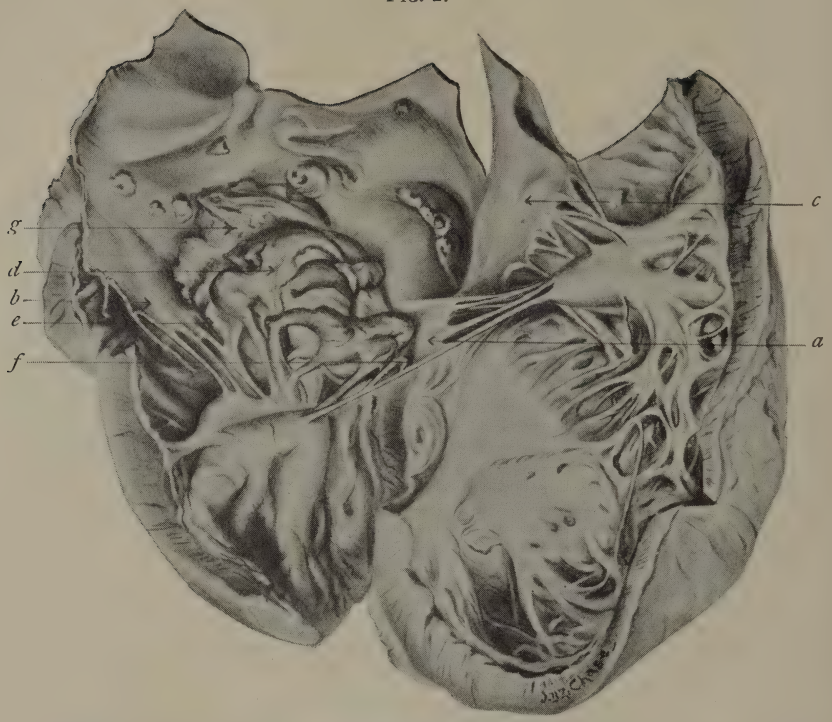
Six days before her admission to the hospital the patient became ill, the onset being rather sudden. The first symptom was diarrhea, but tympanitic distention of the abdomen and pain over the heart promptly followed. She suffered with headache, vertigo, and a tendency to syncope on slight exertion. Her appetite was not much

FIG. 1.



Section of heart exposing the left ventricle. The adventitious (anomalous) valvular segment (*a*) is seen projecting into the ventricle between the mitral segments.

FIG. 2.



Section of heart exposing the auricular and ventricular cavities. The section divides the anterior segment of the mitral valve into two parts, *b* and *c*. The posterior mitral leaflet is small (*a*). The adventitious (anomalous) valvular appendage (*d*) is seen to be continuous with the anterior segment at *e* and the posterior at *f*. The fresh endocardial vegetations are seen at *g*, and several older areas are scattered upon the wall of the auricle.

impaired, but vomiting interfered with the taking of food. The abdomen was uniformly though only moderately distended; the pain was diffuse. There were from two to five loose, yellow stools daily; and the patient complained of slight burning pain on urination. The cardiac pain was constant but not severe. The pulse was weak and rapid; the rate was 124 per minute. Temperature 38.5° C. (101.2° F.).

Physical Examination.—The patient was quite prostrated; dyspnea was evident. The apex-beat of the heart was found in the seventh interspace and outside the nipple line. It was vigorous and fairly regular. On percussion the cardiac outline was found enlarged, mainly to the left and downward. Auscultation discovered peculiar cardiac sounds. In the sitting posture a loud and distinctly marked presystolic murmur was heard over the apex, followed by a less distinct systolic murmur. Another systolic murmur was audible in the aortic region. The pulmonary second sound was accentuated. In the recumbent posture the presystolic murmur was scarcely or not at all audible, but the systolic murmur could be heard at the apex and as far to the left as the axilla or angle of the scapula.

Examination of the lungs revealed no abnormality. The abdomen was moderately distended; the skin was normal (no eruption); there was tenderness on palpation, but nothing abnormal beyond this. The belly was tympanitic, and the area of splenic dulness somewhat enlarged.

The patient was depressed. Reflexes, sensation, etc., normal. Between 850 and 1200 cubic centimetres of urine were passed daily. The examination gave the following results: Specific gravity, 1014; reaction, acid; color, reddish-yellow; small amount of albumin; no sugar. Microscopically granular and hyaline casts, red corpuscles, and kidney epithelium were discovered.

The patient remained in the hospital thirty-two days, until her death. During this period her temperature varied from 36.7° to 40° C. (98.5° to 104° F.), but for the most part it was regular and continuous. A short time before death it became irregular, and immediately before death there was a rapid decline to 35° C. (95.2° F.).

During the latter part of the illness signs of respiratory and cardiac embarrassment became more pronounced. Dulness, impairment of the breath-sounds, and liquid râles were detected at the bases of the lungs posteriorly; and there was some yellowish expectoration. Gradually the patient grew weaker, the pulse and breathing failed, and death occurred on November 13, 1895.

Autopsy.—(Six hours after death.) The body is that of a well-formed young woman. Rigor mortis slight. Post-mortem lividity is marked; the ankles are slightly edematous.

On opening the thorax a considerable quantity of clear serous liquid was found in both pleural cavities. There were no adhesions. The lungs were heavy, and on removal both bases were found to be more or less consolidated. This affected the posterior or dependent portions much more than the anterior parts. On section the consolidated areas were found to be mottled in appearance, some areas being slate-colored, others dark red or violaceous. Areas of distinct, hemorrhagic infiltration merged insensibly into others which were merely congested. The latter in turn were continuous with areas of light color from which liquid flowed abundantly. The upper lobes were somewhat congested and edematous, but not decidedly so.

The pericardium contained but a small quantity of serous liquid. The heart was decidedly enlarged, the hypertrophy involving the left and right ventricles. The superficial vessels seemed normal. A few small "milk spots" were seen in the epicardium. On section the muscle of the heart was found to be fairly firm, but was rather light-colored. For the most part the muscle seemed granular or opaque, but in places was decidedly fatty in appearance. The cavities of the heart were all somewhat enlarged. A striking peculiarity of the mitral valve became evident at once on opening the left ventricle. Viewed from the ventricular side, this consisted in a pouch-like protrusion from the auricle, lying between the anterior and posterior leaflets of the mitral valve. On close inspection this was found to be an endocardial reflexion and had thick chordæ tendiniæ attached to it. When examined from the auricular side, the pouch alluded to was found to be an anomalous appendage of the mitral valve formed in the following manner: At the right extremity of the anterior leaflet of the mitral valve instead of a free edge there was an abnormal continuation of the endocardial reflexion, attached to the wall of the left auricle and held by thick chordæ tendiniæ springing from a supernumerary papillary muscle in the upper and anterior part of the wall of the left ventricle. The anomalous continuation of the edge of the mitral valve extended from the right border of the anterior leaflet in a serpentine manner upward and then downward upon the wall of the auricle, and was continuous at its other extremity with the right edge of the posterior mitral leaflet. The edge of this adventitious valvular segment, as it may properly be regarded, was contracted and thick so that the body or part between the attachment and edge was pouch-like, and it was one part of this which projected through the mitral orifice into the ventricle.

In addition to the anomalous valve there was seen in the auricle wide-spread endocarditis, both old and recent. The wall of the auricle in several places presented small nodular elevations of more

or less sclerotic character, and some of them calcareous. The anomalous portion of the valve was thickened in all parts by interstitial change, but in one part was involved by a fresh inflammatory and necrotic process. This extended to the wall of the auricle at the base of the valve, involving this to a considerable distance. The area of disease was in all two or three centimetres in diameter and one centimetre thick, and presented itself as a mass of fibrinous deposit of a friable character, and papillomatous in appearance. Its color was gray or white in most parts, but was somewhat reddish in other portions. When portions of the deposit were torn from their bases the latter were found to be eroded and necrotic in character.

The aortic valves and the valves of the right heart seemed normal in appearance.

Abdomen.—The peritoneum was healthy. The stomach and intestines presented no special abnormality. The latter were carefully examined, but beyond some prominence of the lymphoid follicles nothing varying from the normal was discovered. The liver was slightly enlarged, and on section was found to be paler in color and more homogeneous in appearance than normal. The pulp was decidedly friable. The kidneys presented much the same appearance as the liver. They were enlarged and lighter in color than normal; the cortex was wide; the capsules stripped easily. In the left was found a recent hemorrhagic infarction of small size. The spleen was decidedly enlarged and was very soft. On section, the Malpighian bodies were found to be prominent and a number of small hemorrhagic infarcts were discovered. The latter were small in size and showed no evidence of retrograde changes. The suprarenal bodies were normal. The pancreas was not noticeably altered. The uterus and its appendages were removed with the bladder and urethra.

On section into the uterus and vagina there was found a considerable amount of muco-purulent exudate in the cervix, and less within the uterus. The mucous membrane was thickened, red, and granular in appearance in the fundus of the uterus and roughened, but less congested in the cervical region. The vagina contained a certain amount of muco-purulent material, but was not itself noticeably affected. The urethra was somewhat reddened and thickened at the external orifice, but the mucosa throughout the canal was not diseased. The bladder was normal. The Fallopian tubes were both somewhat enlarged and on section were found to contain slightly turbid liquid. The walls were thicker than normal. The ovaries presented no evidence of disease.

Microscopic and Bacteriological Examination.—I wish to acknowledge my indebtedness to Dr. S. S. Kneass for his aid in the bacteri-

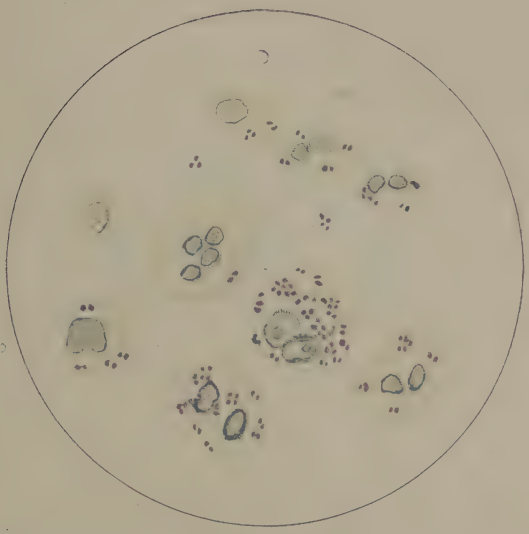
ological studies of this case. In the course of our autopsies it had been customary to make cultures from the heart's blood and from the various organs; but as no suspicion had been entertained as to the primary infection in this case we were provided with merely the ordinary agar and serum culture-tubes. Cultures were made from the blood of the right ventricle, from the endocardial vegetations, from the lungs, and from the spleen. Cover-glass preparations were made of the muco-purulent matter found in the uterus, of bits of the vegetations of the heart, and of scrapings from the lungs. (Unfortunately the uterus and its attachments were misplaced and thus lost.)

Growths were obtained from the lungs, blood of the right ventricle, and spleen. Those from the lungs appeared as a sparse growth upon the surface of the culture medium, and on microscopic examination proved to be a streptococcus. The blood of the right ventricle and spleen contained a small coccus of the staphylococcus group. The tubes inoculated with bits of the endocardial vegetations remained entirely sterile.

Microscopic examination was made of portions of the various organs (except uterus, etc.) and of the cardiac vegetations. The sections were stained with hematoxylin and eosin, Löffler's blue, Kühne's blue, carbol-thionin, and by Gram's method. The lungs were found to present a mixed form of cellular pneumonia. In many parts the alveoli were filled with large epithelial cells, separated by fluid, or here and there a leucocyte; in other parts the air-spaces were densely packed with leucocytes, while in still others hemorrhagic exudation was pronounced. There were scattered masses of cocci lying in groups like staphylococci and staining with Gram's method or the other methods. No distinct chain formations or streptococci were discovered. Sections of the liver and kidney showed marked epithelial degeneration, the cells presenting a granular appearance, and the nuclei in many places refusing the stain or staining irregularly. In certain areas complete granular degeneration of the nuclei of the cells was observed. The sections of the spleen were marked by the amount of hemorrhagic infiltration observed. Staining for micro-organisms in these organs was negative. The infarcts were studied with particular care, but no organisms were visible.

The sections and examination of the cardiac vegetations gave surprising results. The scrapings made at the autopsy disclosed diplococci in the leucocytes and to a less extent outside of these. These diplococci were well stained with the blue stains, and especially with thionin; they were decolorized in Gram's stain. The portions, rapidly hardened in alcohol which were sectioned, were found to consist of masses of polynuclear and, to a small extent, mononuclear leu-

Fig. 3.



Gonococci in the cells and between cells. Drawn from one field of the microscope (Zeiss, one-twelfth oil immersion; ocular, No. 3).

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cocytes, held together by a small amount of fibrin in the form of a wavy network or of a homogeneous matrix. Stained with Löffler's or Kühne's blue, or especially with thionin, large numbers of diplococci were discovered in and between the leucocytes. Those within the cells invariably occupied the protoplasm, never the nucleus. Those between the cells were very sparse and were always grouped in pairs, though clusters of these might be associated. In staining the sections it was found that prolonged decolorization with alcohol decolorized the diplococci. This was much more marked in the case of the blue stains and the aniline oil-gentian violet stain than in the case of thionin. The latter gave by far the most satisfactory results of all the stains employed. It was peculiarly effective when the sections were placed in it for twenty-four hours. The diplococci constantly took on a reddish or violet hue, while the nuclei of the cells were stained a brilliant blue. The nuclei in many parts were almost without exception degenerated and broken into small, round, granulation-like fragments, which made the recognition of the diplococci more difficult in the sections in which other stains were employed. In the sections treated with thionin the micrococci could be readily distinguished from all of such granulations.

In sections treated by Gram's method the organisms were rapidly and completely decolorized. In studying the micrococci more minutely it was found that, though they occurred in pairs almost exclusively, there were some single forms and other groups in which four were associated in the characteristic tetragonal (merismopedial) form. The separate cocci were in many places characteristically reniform or biscuit-shaped, the longer axes being parallel and the concavities opposed to each other. In other parts this appearance did not exist, though in every group of the micro-organisms some at least were of the biscuit-form.

Cover-glass preparations made from the mucopurulent matter in the vagina and cervix uteri disclosed no diplococci, but merely a short bacillus. Unfortunately, the loss of the specimen prevented a more minute examination of the genital organs, and the presence or absence of diplococci in the deeper tissues could not be determined.

In reporting this case as one of probable gonorrheal origin, I am aware that a certain amount of doubt exists, and must therefore detail the reasons that seem to justify its acceptance as a genuine case.

In the first place, the curious condition of the mitral valve requires discussion. This, I have no doubt, was largely a congenital anomaly. The possibility of compensatory hypertrophy of the valvular segments to which Sibson called attention must undoubtedly

be admitted in chronic cardiac disease, and I have seen instances which presented such an appearance; but in the present case there was an appendage of such anomalous character and so extensive that the suspicion of a developmental condition could not have been entertained, even if there had not been a distinct supernumerary papillary muscle to evidence the congenital nature of the condition.

Further, there was a distinct history of rheumatism at the age of 7 and of cardiac disease at that time. Some of the endocardial lesions also showed that there had been an ancient endocarditis. In the light of these facts the attack of endocarditis which led to the patient's death might be put down as one of "efflorescing" or recurring endocarditis. This, however, does not exclude a new infection; rather, indeed, it favors this idea. My own interpretation of the history is something as follows: Congenital anomaly of mitral valve establishing a place of lesser resistance; rheumatism at seven with acute terminating in chronic endocarditis; further loss of resistance at the damaged spot, and finally new infection with fatal endocarditis.

Whether this last infection shall be regarded as gonorrheal or not must depend upon the weight we are disposed to place upon negative evidence. Practically all of the cases of so-called gonorrheal endocarditis reported in the literature have been based upon evidence of the same kind; some, indeed, upon the morphology alone of the organism discovered in the vegetations or elsewhere. At the present time better proof is required than the mere appearance, size, and grouping of the organisms. While it remains true that the biscuit-shape arrangement and the intracellular position of the organisms is more or less characteristic, these features are not entirely distinctive. Bacteriologists uniformly recognize that staphylococci, streptococci, and certain other organisms may be arranged in pairs in practically identical fashion at some stage of their growth. It is proper, however, to add that this is not regularly the case with any given culture, or in any instance in which such organisms are found in tissues, while the gonococcus habitually and almost uniformly presents the grouping alluded to.

The second point of peculiarity that has been relied upon, the intracellular position, is even less satisfactory. A long list of bacteria, including staphylococci, streptococci, and other micrococci, together with various bacilli, might be prepared to show that this feature is by no means characteristic.

Two forms should be referred to more particularly: the diplococcus intracellularis meningitidis, described by Weichselbaum and Goldschmidt in 1887, and the diplococcus albicans tardisimus,

found by Wachholz and Nowak in a medico-legal case of supposed gonorrhea. The former of these two has been studied with greater care, and while it presents morphological similarities is readily distinguished from the gonococcus by the ease with which cultures are obtained on ordinary media, and, according to Jaeger and others, by the fact that decolorization does not occur with Gram's stain when cover-glass preparations are studied, though it does take place in sections. As far as the bearing of these facts upon my own case is concerned, I have no hesitation in excluding this organism. Cultures with the ordinary media failed entirely, though the number of bacteria in the parts of the vegetations implanted upon the media was enormous. Further complete decolorization with Gram's stain was regularly observed.

Dauber and Borst found in their case an organism which presented the same appearances as the gonococcus, and decolorized with Gram's stain, but showed a different appearance in culture upon blood-serum agar from that of the gonococcus. The difference in culture observed in this single case seems to me too slight to warrant absolute deductions, and I have not hesitated to include this case (as I have also that of Wilms), despite the view of the authors that it was not gonorrheal.

Allusion has several times been made to the behavior of gonococci towards Gram's stain, and formerly much stress was placed upon this. It must be recognized, however, that other micrococci behave in a similar manner. Bumm described such forms, some of them diplococci, in his work on gonorrheal disease of the mucous membranes, and a number of other authors have reported similarly. Even the staphylococcus in later generations may show this peculiarity, so that the importance of Gram's stain must not be overestimated.

The final diagnostic criterion is the culture. This includes the medium upon which a growth is obtained and the appearance of the growth itself. The difficulty of cultivating the gonococcus is too well known to require comment. Ordinary media, such as agar, glycerin agar, or the ordinary blood-serum remain sterile. This fact is one of great importance in the diagnosis of some of the reported cases in which no culture of any kind could be obtained, and it was particularly important in my own case. The ease with which I have obtained growths from other cases of endocarditis (due to staphylococci and streptococci) contrasts strongly with their entire absence in this case, and especially as the microscopic examination showed such a wealth of micrococci. As far as our knowledge of bacteria extends, the gonococcus is the only organism of similar morphology likely to behave in this manner.

Taking the evidence all in all, I am therefore led to believe that this case was one of true gonorrheal endocarditis, and not one of a second or other infection. The facts favoring this view are briefly: the entire correspondence with gonococci in morphology, position, and behavior to stains; and the entire failure of cultivation experiments.

The following cases are abstracted to show the character of the clinical manifestations and the pathological lesions in reported instances that may with a certain degree of probability be looked upon as cases of genuine gonorrheal inflammation of the endocardium.

Case I.—Schedler ("Casuistik der Herzaffection bei Tripper," Inaugural Dissertation, Berlin, 1880) reported a case from Leyden's clinic occurring in a young man of 22 years. The patient had gonorrhea during the summer of 1879, but this soon subsided. Later the testicle was swollen, and after three weeks arthritis, fever, and night-sweats developed. Three weeks later he was apparently well. In March, 1880, after a chill, he entered the hospital, where enlargement of the heart and a diastolic aortic murmur were discovered. He had marked dyspnea, stupor, and died after a month.

Post mortem, the aortic segments were found to be covered with polypoid vegetations. The author contends that the diagnosis of gonorrheal endocarditis was established by exclusion, no other cause being apparent for the malignant endocarditis.

Case II.—Weckerle ("Ulceröse Endocarditis," München, 1886) describes a case which occurred in a young woman of 24 years. On admission to the hospital, April 24, 1886, the patient was suffering with acute gonorrhea and right-sided inguinal bubo. Soon the symptoms of a simple, uncomplicated rheumatism developed. The heart was unaffected. In June, cardiac symptoms had developed, and endocarditis of the pulmonary orifice was diagnosticated. Death occurred a month later, the symptoms being those of an acute, malignant endocarditis.

Post mortem the heart was found enlarged, and advanced endocarditis of the pulmonary valve was discovered. The segments were greatly distorted and covered with a friable and irregular deposit, beneath which the valve was necrotic. The lumen of the pulmonary orifice was greatly encroached upon by these vegetations, which scarcely permitted the passage of a lead-pencil. The vagina contained yellowish pus.

Micrococci in clusters and chains were discovered, but these were larger than gonococci. The author does not believe this a gonorrheal case, but, as one of the reviewers has said, he did not make sufficient examinations to assert that gonococci were not present.

CASE III.—ROTHMUND ("Endocarditis Ulcerosa nach Gonorrhöa," Dissertation, Zürich, 1889) reports a case occurring in a man aged 51 years. The patient was admitted on November 7, 1885, with signs of arthritis which followed an attack of gonorrhea by eight or nine weeks, the gonorrhea being still present. On November 30, a loud systolic murmur was heard over the mitral and tricuspid areas. On December 10, a high-pitched diastolic murmur was heard over the aortic and pulmonary regions. The day following, the patient sank into collapse, and in a few days perished.

The post-mortem examination, enlargement of the left ventricle and advanced disease of the aortic valve. Two of the leaflets of the latter were covered with vegetations or distorted and perforated. The bladder and urethra contained much thick pus. The right knee-joint and the left ankle-joint were swollen and contained sero-hemorrhagic liquid.

In the liquid of the joints as well as in the blood of the right heart were found micrococci having form and grouping of gonococci.

CASE IV.—HIS (*Berliner klinische Wochenschrift*, No. 40, 1892) reports a case occurring in a young man of 19 years. In February the patient had gonorrhea which subsided after three weeks. In March he had attacks of syncope and chills; petechiæ were noted in the skin. In April he entered the hospital. The heart was enlarged and a loud systolic murmur was audible over the apex, but especially over the aortic region. No pus in the urethra, and attempts to demonstrate gonococci in the navicular fossa were negative. The temperature was 40.2° C.; the pulse, 194. The patient became somnolent, had continuous remittent fever varying from 38.6° to 40.7° C., and rapid pulse and respirations. Some swelling of the feet. Soft, moist râles at bases of lungs. Death occurred suddenly.

Post mortem the heart was found enlarged; the aortic valves were covered with fibrinous deposits and ulcerated beneath. Hemorrhages beneath pericardium and endocardium and pleuræ. Petechiæ in skin; a puriform clot at apex of heart; slight interstitial myocarditis; edema of lungs; infarcts in various organs. In the diseased areas micrococci were discovered which presented the form and general features of gonococci when stained with carbol-fuchsin, and which, like the latter, were decolorized in Gram's method. Unfortunately the heart was preserved in Müller's fluid, and the examinations, therefore, lose in value. During life, blood obtained from the ear was examined microscopically and attempts at culture made, but failed. After death, no growths obtained from the spleen or infarcts.

CASE V.—HIS (*Berliner klinische Wochenschrift*, 1892, No. 40) reports a case in a young man of 19 years. Six weeks after the

beginning of the discharge swelling of several joints occurred, and later chills, fever, and sweats ensued. In July he was admitted to the hospital, presenting edematous swelling of the face and increased heart action. A blowing systolic murmur was heard at the apex and to the right of the sternum; a diastolic murmur was audible under the sternum. There was a chill, and the temperature rose to 41.1° C. Fever at first intermittent, then remittent. Pain and subsequently an abscess were noted in the forearm. The patient died in a condition of cyanosis and extreme dyspnea. Slight edema of lungs. Death four months after onset.

Post mortem, "acute endocarditis recurrens" of the aortic valve was discovered, and the left ventricle was enlarged. Small aneurismal dilatation of the aorta with fibrinous deposits; infarcts in spleen; beginning acute parenchymatous nephritis; edema of lung, hydrothorax and hydropericardium. The diagnosis, "acute endocarditis recurrens," was made by Dr. Huber, and subsequently changed by Professor E. Wagner to ulcerative endocarditis.

Case VI.—Leyden (*Deutsche medicinische Wochenschrift*, September, 1893) reported a case in which a man of 22 years, suffering with chronic gonorrhea, epididymitis, and joint troubles, was seized with malignant endocarditis. The patient had remittent fever, frequent chills, signs of aortic regurgitation, and possibly of mitral regurgitation, vomiting, rapid anemia, and general weakness. Finally, marked evidences of infectious nephritis, and death from exhaustion.

Post mortem, deposits and ulcerations were found upon the aortic and mitral valves, and there were small foci of disease in the heart muscle. Cultures made during life with blood from a vein and post mortem with blood of the left ventricle were entirely negative. Sections of the vegetations showed in places near the surface and edges masses of cocci, and near these typical diplococci of the general appearance of gonococci. The latter were mostly within cells and varied in number from one or two pairs to the cell to very many. Leyden and Michaelis regarded these as gonococci, because of their general appearances and form, their ready decolorization by Gram's method, their decolorization with alcohol, and their intracellular position. (Leyden also alludes to a case seen by himself in Traube's clinic when he was assistant, and to one presented in his clinic at Strassburg.)

Case VII.—Wilms (*Münchener medicinische Wochenschrift*, October 3, 1893) denies the *rôle* assigned to the gonococcus in Leyden's and other reported cases. He asserts that the studies of the micro organisms in question prove conclusively that it is incapable of producing true abscesses or ulcerations, and never causes metastatic

foci of disease. He himself reports a case of ulcerative endocarditis occurring in a patient who had suffered with gonorrhea six months before. Three weeks after a second attack he had chills and swelling of his knee. A week after the joint trouble began he had cardiac murmurs and all of the signs of aortic regurgitation. Fever was quite high. Death occurred one and a half months after the onset of the gonorrhea.

Post mortem, an ulcerative and polypoid lesion was found upon the posterior aortic leaflet, and there were abscesses in the heart muscle. There were very many micrococci having the characteristic arrangement and appearance of gonococci in the leucocytes upon the surface of the vegetations, and fewer organisms in the abscesses. Besides, the typical diplococcus form the organisms occurred singly, and in all cases they were rapidly decolorized by Gram's or Weigert's method of staining. The leucocytes were in places quite filled with the cocci. Still he denies that these were certainly gonococci, and refers to an observation of Weichselbaum in which organisms presenting the appearances of gonococci were observed, and in which cultures showed streptococci. In the urethra there were but few diplococci, and these in the submucous tissue.

Case VIII.—Councilman (*American Journal of the Medical Sciences*, 1893) reported a case of a patient who, ten days after the onset of gonorrhea, suffered with polyarthritis, dyspnea, pain in the chest, and enlargement of the heart. He died of asphyxia after five weeks.

The post-mortem examination showed swelling and redness of the synovia of the knee-joint, and deposit of small tubercle-like granulations upon the surface, hemorrhagic pericarditis, and purulent foci in the prostate. The urethral mucosa was infiltrated with round cells, and gonococci were present in small numbers in and between the epithelial cells, while the leucocytes upon the surface contained large numbers. They were absent from the deeper layers of the mucosa, and, though present in small numbers at the openings of the prostatic tubules, were not found in the pus of the abscess. Besides gonococci only a few short bacilli were found in the urethra. The heart muscle was marked by spots of hemorrhagic infiltration and others of a waxy appearance. Microscopically round-cell infiltration and hemorrhagic foci were found, and gonococci were found in the infiltrating cells of the heart muscle, especially in the left auricle. None were found outside the leucocytes. A few were found in the pericardium. The micro-organisms were also detected in the infiltrating cells of the synovial membranes. Councilman points out that in the absence of cultures the occasional diplococcic arrangement of streptococci is to

be recalled, though the decolorization with Gram's method and the absence of fever in the course of the case are opposed to the supposition of a streptococcus infection.

CASE IX.—FRESSEL (*Inaugural Dissertation*, Leipzig, 1894) reports a case occurring in the person of a maid-servant, aged 26 years, who was admitted to the hospital in a dying condition. No history could be obtained except that the patient had suffered with an inflamed foot four weeks before her admission to the hospital. Severe symptoms began a few days before her admission, and at the time of admission extreme weakness, emaciation, anemia, and orthopnea were noted. There were numerous râles in all parts of the lungs; the heart-sounds were weak and altered; the pulse 140 and scarcely palpable; the temperature was 36.6° C. There was edematous swelling and great pain in the left ankle. Death occurred after two hours.

The autopsy performed twenty-four hours after death. Malignant endocarditis of ulcerative and polypoid character was found upon the anterior mitral and the aortic leaflets. In the former the auricular face was specially affected, and the disease had perforated the base of the valve. The aortic segments were less involved. The heart muscle (left ventricle) was grayish or yellowish. The lungs presented edema, hemorrhagic infiltration, and partial consolidation. The kidneys and spleen were practically normal. The bladder contained a small quantity of pus, and the rugæ were very red. The mucous membrane of the urethra was deep red in color. The mucosa of the vagina was granular and hard; the color was dark red, and there was considerable purulent exudate; at one place there was a prominence, which on incision was found to contain pus. The veins of the right parametrium were enlarged and contained fresh thrombi.

The bones and joints of the left foot were normal, but the subcutaneous tissues were markedly edematous.

Microscopic studies of the heart valves showed micrococci having the characters of the gonococcus. Some of the diplococci occupied cells. They were decolorized in Gram's method.

CASE X.—WINTERBERG (*Festschrift zum 25. Jährlicher Jubiläum des Vereins der deutsche Aertze*, San Francisco, 1894).—Man, aged 25 years, suffered from gonorrhea, later epididymitis, and then swelling of elbow-joint, chills, fever, and great weakness. Six weeks after onset of gonorrhea had cyanosis, dyspnea, edema of lungs, systolic and diastolic aortic murmur. Other joints became affected; bloody diarrhea developed; irregular remittent fever, vomiting, albuminuria. Death from exhaustion in seven or eight weeks.

Post mortem, pleural and pericardial effusion, the latter somewhat purulent. Heart muscle pale and with points of pus. The aortic

and pulmonary valves showed extensive destruction, being converted into friable masses; the mitral and tricuspid valves were similarly affected, but less destructively. The liver and spleen showed numerous hemorrhages, and the kidneys had the appearance of amyloid change (?). The intestines presented ecchymoses.

Portions of the vegetations were examined and diplococci of characteristic appearance were discovered in the leucocytes. They were found singly and in pairs. They were readily decolorized by Gram's method. No cultures.

The author refers to a second case in which swelling of knee and ankle-joints, chills and fever developed after acute gonorrhea in a young man of 25 years. A systolic murmur was audible over the aortic region, and a harsher one over the apex. Under treatment the cardiac signs disappeared and the patient recovered in six weeks.

Case XI.—Thayer and Blumer (*Archives de Médecine expérimentale*, November, 1895) report a most interesting case of acute endocarditis due to the gonococcus. The patient was a female, of 34 years, who entered the hospital complaining of cough, weakness, and general pains. She had had two miscarriages. Her illness dated from an attack of rheumatism, which occurred three months before, and in which most of the joints were affected, the disease passing rapidly from one joint to another. The day previous to the admission there was a chill. On examination there was enlargement of the heart with a presystolic and systolic murmur at the apex, and an accentuated second sound in the pulmonary area. She lived nineteen days, showing during this time irregular exacerbations of temperature, often attended with chills, and marked emaciation. The spleen was palpable and there was considerable anemia. Acute ulcerative endocarditis of the mitral valve with infarcts in the lungs and spleen was discovered post mortem. Cultures from the blood during life, on a mixture of blood and agar, showed growths of the appearance of gonococci, and the organisms corresponded in their staining reactions (Gram's method) with gonococci. Cover-slip preparations made at the autopsy from the vagina, uterus, and vegetations on the mitral valve gave similar results, but cultures failed, and a mouse inoculated with a portion of the vegetation remained unaffected. It seems unquestionable that this case was one of true gonorrheal endocarditis.

Case XII.—Dauber and Borst (*Deutsches Archiv für klinische Medicin*, Bd. LVI, Hefte 3 and 4) report a case occurring in a young man, aged 20 years. Ten days before his admission to the hospital a purulent urethral discharge set in, and he came to the hospital on account of pain in the inguinal region. There was a red and tender

swelling in the palm of the left hand. The inguinal glands were enlarged on both sides, and the right spermatic cord was swollen.

The urethral discharge contained diplococci of the characters of gonococci. No other organisms were found. A small paraurethral abscess developed and gonococci were discovered in the pus,—other organisms being absent. The temperature was moderately elevated (the highest point being 38.7° C.), and declined abruptly on the sixth day. On the fourth day after the decline of the temperature there was a sudden chill and rise of fever to 39.2° C., but a gradual decline followed, and after two days the temperature reached 37.4° C. After this there was a mild remitting fever. The spleen seemed enlarged on percussion. The heart was normal in size; the sounds at the apex clear; at the aortic and pulmonary regions the first sound was dull. During a month his condition remained unaltered except that he complained of violent pains in his back and muscles. After the expiration of a month the fever began to be more pronounced and irregular. Finally, evidences of aortic insufficiency (murmur, pulsus celer, arterial sounds, and murmurs) developed, and the patient died three months after the onset of the gonorrhea.

The gonococci had grown steadily less numerous, and were finally replaced by other bacteria. Among the latter were diplococci of rounded form, without the characteristic biscuit-shape, occurring outside of as well as in cells, and decolorizing with Gram's method. Gonococci were absent from the pus during the last two weeks.

The post-mortem examination was performed five hours after death. Cultures were made with the blood and splenic pulp after the method of Kral.

The heart was enlarged and presented an elevated and papillomatous, but necrotic, area upon the aortic valve. The myocardium beneath this was infiltrated and excavated.

The kidneys presented evidences of septic nephritis; the bases of the lungs were consolidated by pneumonic infiltration.

The spleen was considerably enlarged. The urethra was somewhat reddened in its membranous portions. Sections of the diseased portion of the aortic valve showed it to be composed of fibrin, leucocytes, and thrombi of blood plaques. In these were embedded large numbers of micrococci. The latter occurred in groups in and outside of the cells, and in many places were arranged in pairs and had the characteristic biscuit-shape of gonococci. They were decolorized by Gram's stain and by alcohol. They were absent from the spleen, the lungs, and from the other tissues; but the cover-glass preparations made with blood taken from the heart and with the splenic pulp showed micro-organisms which presented similar ap-

pearances, and behaved in the same manner towards stains as the ones referred to.

The culture-tubes all remained sterile with the exception of one blood-serum-agar tube. Upon this small punctiform, yellowish-brown, transparent colonies developed after thirty-six hours. With moderate magnification these appeared round, and the outlines were sharp. Moreover, there were none of the smaller surrounding colonies such as are characteristic of growths of the gonococcus. The organisms found in these cultures proved to be diplococci having the same general characteristics as those of the cover-glass preparations and of the vegetations in the heart.

The authors conclude from these studies that the case in question is one of endocarditis due to a micro organism resembling the gonococcus. They look upon the urethra or the paraurethral abscess as the starting-point or portal of entrance of the micro-organisms.

Case XIII.—Zawadski and Bregman (*Wiener medicinische Wochenschrift*, February 15, 1896) record a case in a girl of 17 years, who had been exposed to infection and had a muco purulent discharge from the uterus and vagina. Cultures demonstrated the presence of staphylococci and the micrococcus tetragenus, but no gonococci grew on the acid gelatin of Turro. About a month previously, shortly after first exposure, she had suffered with headache, chills, fever, and pain in the limbs. After a week she improved, but soon relapsed, and was admitted to the hospital with right hemiparesis and loss of sensation on the right side, even involving the face. The heart was enlarged and a presystolic murmur was detected at the apex. The second pulmonary sound was accentuated. The other organs were healthy. A week later the palsy disappeared and diarrhea set in temporarily, but recurred after relief. Chills and fever continued and pleurisy developed. Subsequently signs of nephritis, cerebral embolism, and stupor. The autopsy showed verrucose endocarditis of the aortic valves, embolism of the left Sylvian artery, edema of the lungs, large, white kidneys, pleural and pericardial effusion, and pneumonia. Organisms showing the morphological characters of gonococci and the characteristic behavior towards Gram's stain were found in and between the cells. Examination of the pleural exudate during life showed streptococci, staphylococci, and the micrococcus tetragenus.

Case XIV.—Finger, Ghon, and Schlagenhaufer, (*Archiv für Dermatologie und Syphilis*, Bd. xxxiii, Heft 1–3) report a case in a young man, 19 years old, previously healthy. The patient acquired gonorrhea (the second attack) in March, and on April 15 had severe

pain and swelling of one knee. There was no previous history of rheumatism, cardiac disease, syphilis, or alcoholism. Cultures from the urethra on his admission to the hospital, April 29, showed gonococci. The next day a loud diastolic murmur was heard over the aortic valve, and this increased in loudness. The urethral discharge ceased the same day. On May 3 death took place from edema of the lungs. The autopsy showed acute endocarditis of the aortic valves with hypertrophy of the left ventricle and myocarditis. There was urethritis and suppurative arthritis.

Examination of the cardiac vegetations showed diplococci having the morphology and staining properties of gonococci. Cultures made from the vegetations, the blood, the joint, and the urethra remained sterile.

The cases included in this series are, some at least, of decidedly doubtful character and standing alone, but few of them could be regarded as definitely suggestive. In only one instance (that of Thayer and Blumer) were cultures of the gonococcus obtained, and in this case the subsequent propagation of the organisms failed. Several of the cases seem fairly certain from the discovery of abundant microorganisms and the entire failure of attempts at cultivation. Other cases in which the diagnosis was made from the morphology alone are supported by the clinical history and etiological considerations. The case of Schedler (Leyden's first case) is included on account of the marked similarity with more certain cases and on account of its importance in the history of the disease. A few cases recorded and probably well determined have been omitted as the original papers or satisfactory abstracts could not be consulted. Only fatal cases and those subjected to more or less satisfactory study have been included. No case has as yet been discovered in which the diagnosis has been established by bacteriological examination (of the blood) and which has terminated in recovery.

Tabulated Report of Cases.

No.	Reporter.	Sex.	Age.	Onset and Previous Condition.	Duration.	Important Symptoms.	Fever.	Form of Death.	Pathological Lesions.
1	Schedler (Leyden).	M.	22	Nine or ten months after gonorrheal rheumatism.	One month.	Dyspnea, stupor.	. . . . .	. . . . .	Aortic, polypoid; no micro-organisms.
2	Weckerle.	F.	24	Bubo and simple (?) rheumatism one month.	One month.	Symptoms of malignant endocarditis.	. . . . .	. . . . .	Pulmonary; micro-organisms (?).
3	Rothmund.	M.	51	Two and a half months, arthritis, cystitis.	Two weeks.	Cardiac symptoms, collapse.	. . . . .	Collapse.	Aortic.
4	His (1)	M.	19	Five weeks after gonorrhea.	One month.	Roseolus and petechial eruption, edema, chills and fever, 40 7° C., signs of aortic valve-disease.	Continuous, remittent.	Sudden.	Aortic and myocardial.
5	His (2)	M.	19	Arthritis six weeks after gonorrhea, cardiac disease about same time.	Eight months.	Chills, pains, arthritis, aortic regurgitation, syncope, edema.	Intermittent and remittent.	Death from edema and hydrothorax.	Aortic valve, aneurism.
6	Leyden.	M.	22	Chronic epididymitis arthritis.	One month.	Malignant endocarditis, chills, remittent fever, vomiting, infectious nephritis.	Remittent, continuous.	Exhaustion	Aortic, mitral, and myocardial.
7	Wilms.	M.	26	Gonorrhea six months before; a second attack followed in three weeks by arthritis, endocarditis one week later	One and a half months after gonorrhea.	Chills, arthritis, signs of aortic regurgitation.	High.	. . . . .	Aortic and myocardial.
8	Councilman.	M.	. .	Polyarthritis.	Five weeks.	Dyspnea, pain in chest, asphyxia.	No fever.	Asphyxia.	Myocardial.
9	Fressel.	F.	26	Inflammation of foot, vaginitis, and abscess under mucosa.	. . . . .	Weakness, emaciation, anemia, orthopnea, râles in lungs.	36.6° C.	. . . . .	Mitral and aortic.
10	Winterberg.	M.	25	Epididymitis, orchitis four to six weeks.	Seven to eight weeks.	Chills, fever, dyspnea, infectious nephritis, edema of lungs.	Remittent.	Exhaustion.	Aortic, mitral, tricuspid, pulmonary myocardial.
11	Thayer and Blumer.	F.	34	General rheumatism three months before.	Nineteen days.	Weakness, chills, fever.	Irregular fever.	. . . . .	Mitral.
12	Dauber and Borst.	M.	20	Ten days enlarged glands; paraurethral abscess.	Three months.	Fever, chills, pain in back and limbs, pneumonia.	High and irregular.	. . . . .	Aortic and myocardial.
13	Zawadski and Bregman	F.	17	Pain in limbs (?).	Eighty days.	Fever, chills, paralysis due to embolism, pleurisy and pneumonia, nephritis.	Irregular and high.	Cerebral symptoms.	Aortic.
14	Finger, *et al.*	M.	19	One month after gonorrhea arthritis (?); fourteen days later murmur.	Four days after murmur.	Arthritis, cardiac failure, edema of lungs.	. . . . .	Pulmonary symptoms.	Aortic and myocardial.
15	Stengel.	F.	20	Chronic gonorrhea one year.	Thirty-two days.	Diarrhea, abdominal tympany, dyspnea, vomiting, cardiac pain and palpitation, fever, pneumonia, infectious nephritis.	Continuous, 36.7° to 40° C.	Exhaustion.	Mitral.

Clinical and Pathological Features.

The attempt to construct a clinical history and course from the above cases must necessarily be somewhat unsatisfactory. It is highly probable that many cases of milder endocarditis arise in the course of gonorrhea and proceed to a favorable termination or end in chronic valvular disease. Some of these may be due to secondary infection; some to the gonococcus itself. It is impossible at the present time to determine the nature of such milder cases, and the clinical study of the disease must be confined to those in which autopsies have been obtained.

Sex and Age.—Of the fifteen cases here recorded, ten were males and five females, a proportion that is easily explained by the frequency of the primary disease in the two sexes and by the number of local complications from which the general infection could occur. The age of the patient is, of course, in similar manner, explained by the age at which the primary disorder commonly occurs.

Source of Infection; Intermediate Complications.—In some cases no intermediary condition is observed between the original gonorrhea and the endocardial disease. This was true of His's first case and of my own. I was careful to examine the uterine appendages, the periurethral strictures, and the bladder with great care, and discovered no macroscopic lesion. It is unfortunate that the specimens were lost and microscopic examinations of these structures could not be obtained. In the case of Zawadski and Bregman the manner of the infection was doubtful. The patient complained of great pains in the limbs, but there was no localized lesion; and it seemed as if a general septicemia occurred at once. In the twelve cases remaining some form of secondary complication intervened between the gonorrhea and the cardiac disease. In ten of the twelve there was a history of arthritis; in six of these arthritis alone is noted; in one bubo and arthritis; in one arthritis and cystitis; in one chronic epididymitis and arthritis; and in one an abscess under the vaginal mucosa. Of the two cases which presented complications without arthritis, one showed a paraurethral abscess with enlarged glands, and one epidydimitis and orchitis.

Date of Onset.—The time-relation between the original infection and the occurrence of cardiac symptoms was quite variable. In one case the interval was quite short, something over ten days (Dauber and Borst); but in most of the cases it ranged from four or six weeks to two or three months. In one case it was nine or ten months; in my own it was a year after the gonorrhea began, and in one it is merely stated that the patient suffered with chronic gonorrheal epididymitis and orchitis.

The onset of the disease was frequently abrupt, and marked symptoms were early developed in most instances. Chills and fever marked the beginning in some, while others presented cardiac manifestations at the onset.

Important Symptoms.—The clinical history of these cases does not differ much from that seen in other forms of intense malignant endocarditis. High fever of continuous remitting type or sometimes intermittent was noted in practically all cases. In Councilman's case (which, it may again be recalled, was one of myocarditis and not endocarditis) there was complete absence of fever, and the author is disposed to place considerable significance upon this as a point from ordinary micrococcic infections. The fact that fever occurred in all of the other cases in which this point is noted in my table shows that no great reliance could be placed upon this view. Prostration, sweating, increasing anemia and emaciation, and sometimes pronounced nervous symptoms with the final development of a condition that might properly be spoken of as a typhoid state, were observed in the majority of the cases. In my own, these symptoms with abdominal tympany and diarrhea were sufficiently pronounced to lead to the suspicion at first that the case was one of typhoid fever. Perhaps even more frequently the patient presented the appearances of an intense form of septicemia, having repeated chills with irregular paroxysms of fever and drenching sweats, roseolous or petechial eruption, and sometimes embolic manifestations or albuminuria and casts as an indication of the supervention of infectious nephritis. Edema of the lungs and pneumonia are noted in a number of cases. The cardiac manifestations were prominent in only a minority of the cases, the symptoms, dyspnea, pain at the heart, and palpitations being usually overshadowed by the general systemic disturbance. The duration of the disease was variable. In Finger's case death occurred four days after the murmur was discovered; in the case of Rothmund there is some doubt as to the exact duration, but as nearly as can be determined death seems to have occurred two weeks after the first symptoms developed; in Thayer and Blumer's case the duration was nineteen days, while in several others it was one month. The longest case noted is the second one of His, in which the duration is set down as being eight months. Death usually took place from exhaustion and general intoxication, or from rapid weakening and collapse.

In several of the cases pulmonary symptoms and asphyxia marked the close of the disease.

The seat of the disease was the aortic valve in eleven out of the fourteen cases (Councilman's case is omitted); the aortic valve alone being involved in eight cases, the aortic with the mitral in two cases,

and the aortic with the other three valves in one. The mitral valve was involved alone in two cases and the pulmonary alone in one case. The myocardium was alone involved in one case (Councilman's), and in connection with valvular disease in six cases, four of these being cases of aortic disease and myocardial disease, one aortic, mitral, and myocardial, and one myocardial with involvement of all the valves.

As for the lesions themselves, it was found that these for the most part were considerable in size and in the area of involvement. In most of the cases in which accurate descriptions are given there were large polypoid excrescences of friable character and covering more or less deeply eroded or necrotic areas of the endocardium. Complete destruction of the valve segments was not usual.

MEMORANDUM.

PROBABLE SOLUTION OF THE WORLD'S LEPER PROBLEM.

At last the leper problem of the world bids fair to find a solution. Either the Carrasquilla serum cure, or the Leprosy Congress and its International World's Committee, formed of official delegates of all the governments, to meet in Berlin, October, 1897, will solve it. Carrasquilla, a physician of Bogota, Colombia, claims that his serum is a cure for leprosy. This serum is obtained by inoculating the blood of a leper into a horse, and, after several days, using the serum of the horse's blood as a curative agent. Theoretically, this principle is not sound in the first instance, because there is no bacillus in the leper's blood; and, secondly, because no animal, as far as we know, can be inoculated with leprosy. This disease is very different in this respect from tuberculosis, etc. Carrasquilla, however, believes that he has succeeded in effecting cures with his serum. This question will soon be decided, for I have sent consignments of this serum to Dr. Hansen, inspector-general of leprosy in Norway, to Dr. Petersen, who discharges the same functions in Russia, and to President Smith, of the Hawaiian Board of Health. These gentlemen promise to report the results of their observations.

The world's most eminent leprologists will meet in congress in 1897. These will, in all probability, rule for the compulsory isolation of all lepers in every country, and thus there is hope, nay, certitude,

that in one generation leprosy will have ceased to exist. Quarantine laws will also be promulgated, so that new countries cannot be infected with the scourge.

This plan has been outlined by Dr. Goldschmidt, of Paris, and the undersigned, and has recently been adopted by the gentlemen, who have obtained, or have undertaken to obtain, the influence of the German government, and the issuing by it of an invitation to other governments, to appoint their delegates.

ALBERT S. ASHMEAD, M.D.

ALUMNI NOTES.

THE AUXILIARY DEPARTMENT OF MEDICINE.

PROVOST HARRISON has recommended to the Board of Trustees of the University the abolishing of the Auxiliary Department of Medicine, and the distributing of its work among the other departments. The reasons given for such action are that the department was founded at a time when the medical course of the University was by no means what it has since become, and when there was no opportunity to obtain in the college courses of peculiar value to those who intended to prepare themselves for the practice of medicine. The conditions as obtaining at that time have changed to such a degree that this department has not, says the provost, a real reason for existence as a separate department. Almost all of its students are registered in other departments of the University. Its courses are doubtless of value, but, it is recommended, they could be distributed among other departments in such a way as to increase their value and do away with needless duplication.

The zoological, anatomical, botanical, and geological courses in the college have made unnecessary the delivery of such courses in the Auxiliary Department of Medicine. Medical jurisprudence and hygiene, it is suggested, might well be made a part of the course of the Medical School. There has been organized in the college a two years' course preparatory to medicine, which gives a much better fitting for the study of medicine than the collection of courses offered by the Auxiliary Department of Medicine as an independent group.

The granting of degrees for work in this Department has

already been abolished, and now only certificates are given, testifying that students have fulfilled the demands of the course. At the last commencement the degree of Bachelor of Sciences Auxiliary to Medicine was granted to four medical students, who had taken the course, as they had entered at a time when the degree was promised upon fulfilling certain conditions.

Resolution on the Death of Dr. Wormley.

At a meeting of the Lycoming County Medical Society, February 2, 1897, the following resolutions were unanimously adopted:

Whereas, The great Ruler of the universe in his all-wise providence has removed from our profession, after many years of active and useful service, the late Dr. Theodore G. Wormley, professor of chemistry and toxicology in the University Medical Department of Pennsylvania.

Whereas, The membership of this society and physicians in general feel that they have lost a most worthy brother and teacher, whose scientific investigations have enlightened the medical profession throughout the world.

Resolved, That we do hereby testify to his sterling worth as a teacher and contributor of valuable knowledge to our profession, and that by his death we have sustained a great loss.

Resolved, That we extend to his family, friends, and the University of Pennsylvania our deepest sympathy in this their severe bereavement.

Resolved, That copies of these resolutions from the records be mailed to the family and University of Pennsylvania, and published in the University Medical Magazine.

H. M. Essick,
Chairman of Committee.

Dr. Charles A. Oliver's book on "The Ophthalmic Methods employed for the Recognition of Nerve Disease" published by the University of Pennsylvania Press, has been translated into the French by Professor Baudry, of the University of Lille, France.

Appointments.

Dr. James Tyson was elected president of the Philadelphia County Medical Society at the last meeting.

Dr. Charles Burr was elected president of the Philadelphia Neurological Society at the January meeting.

Dr. Charles M. Franklin, of Lancaster, has been appointed first assistant physician to the Sheppard Asylum, Baltimore.

Dr. A. O. J. Kelly has been appointed visiting physician to St. Agnes's Hospital, Philadelphia.

Necrology.

Dr. Daniel March, Jr., of Winchester, Mass., died at Woburn, January 1, 1897, aged 52 years. Dr. March was born in New Haven, Conn., but came to Woburn when a boy. He graduated from the Medical Department of the University of Pennsylvania in 1868. After serving as house-physician in the Episcopal Hospital of Philadelphia, he removed to Pittsburg, where he practised for a time. He removed to Winchester in 1879, and had a large practice in that town and vicinity.

Dr. J. R. McLean died at Amherst, Nova Scotia, December 12, 1896. He graduated from the University of Pennsylvania in 1873. He was widely known through the maritime provinces of Canada as a specialist in diseases of the eye, nose, and throat.

Dr. William R. Little died at Bloomsburg, N. J., February 13, 1897. He graduated from the University of Pennsylvania in 1878. At the time of his death he was Coroner of Hunterdon County, N. J.

Dr. Sam H. Hurd, class of '58, died at Atlantic City, N. J., on February 5, 1897.

The Cause of Death following Burns.

Ajello and Parascandolo conducted numerous investigations concerning the cause of death after burns, and conclude that the deaths are caused by toxic ptomaines. Death is not due to the toxin of the bacterium proteus, nor to any anatomical changes which the blood or burnt parts may suffer. The ptomaines of burnt organs are the same when the organ is first removed from the body and then burnt. Healthy animals inoculated with this die with the same symptoms as burnt animals. Death after burning is therefore due to the absorption of ptomaines produced by chemical changes in the tissues due to burns. The immediate removal of the burnt part prevents this absorption, and consequently all specific symptoms of the burn and death. The same objects may be attained by venesection and the immediate transfusion of healthy blood or artificial serum.—*Gazz. degli Ospedali e delle Clin.*, No. 83, 1896; *Centralblatt für innere Medicin*, No. 51, 1896.

EDITORIAL.

VACCINATION AGAINST TYPHOID FEVER.

In the *Deutsche medicinische Wochenschrift* for November 12, 1896, Pfeiffer and Kolle, of the Berlin Institut für Infectionskrankheiten, announce the results of certain experiments undertaken to determine the possibility of protecting healthy subjects from typhoid fever by inoculating them with dead cultures of typhoid bacilli. These researches were inspired by the achievements of Haffkine in protective inoculation against cholera. In India, last year, over 100,000 people were inoculated with cultures of cholera bacilli, and the immunity which was secured by this treatment is sufficient to justify the belief that a valuable means of arresting the spread of cholera epidemics has been discovered.

Pfeiffer and Kolle in their experiments used a virulent culture of typhoid bacilli obtained from the spleen. A cubic centimetre of a bouillon preparation of this culture, rendered absolutely sterile by heat, was injected under the skin of individuals who were known not to have had typhoid fever. The inoculations were followed in a few hours by shivering, malaise, vertigo, and fever; the symptoms persisting for twenty-four hours. The blood-serum of these subjects, drawn six and eleven days after the inoculations, was found to have a distinct immunizing power when injected into lower animals. Serum obtained six days after the operation had the power of saving a guinea-pig into the abdomen of which an otherwise fatal dose of a typhoid culture had been injected. Serum drawn at the eleventh day had even a greater protective influence. The authors conclude that it is more than probable that the appearance of specific bactericidal substances in the blood of individuals who have had typhoid fever represents the chief cause of the immunity possessed by them. If this is correct, then it is to be expected that these prophylactic inoculations with killed typhoid cultures can produce an immunity of equal intensity and duration as that found after an attack of typhoid fever.

From a paper recently published by Wright and Semple (*British Medical Journal*, January 30, 1897) it appears that Pfeiffer and Kolle were not the first to employ antityphoid vaccination. The former experimenters, acting on a suggestion made by Haffkine, made a number of inoculations in the summer of 1895, which were subsequently recorded in the *Lancet* for September 19, 1896. Wright and Semple employ a vaccine made from agar cultures of typhoid bacilli

which have been grown for twenty-four hours at blood-heat, and which are then emulsified by the addition of a measured quantity of sterile broth. The emulsion thus obtained is drawn into a series of glass tubes, which are finally sealed and subjected to a temperature of 60° C. for five minutes, in order to render their contents completely sterile. Generally the typhoid culture employed was of such a strength that one-fourth of a tube constituted a lethal dose for a guinea-pig of 350 to 400 grammes when hypodermically injected. From one-twentieth to one-fourth of a tube was employed for the antityphoid vaccinations, the fluid being injected into the flank.

The researches of Pfeiffer, Gruber, Durham, and Widal have furnished an excellent method of determining the effect of these protective inoculations. To quote from the paper of Wright and Semple referred to, Pfeiffer and his followers have demonstrated that whenever the micro-organisms which are causally associated with a specific fever are brought in contact with the serum or plasma of an animal or a patient who is undergoing or has undergone an attack of the specific fever in question, the following succession of phenomena manifests itself: (*a*) The bacteria become agglutinated together; (*b*) the bacteria lose their motility; (*c*) the clumps of agglutinated bacteria sink to the bottom, and the culture fluid, which was previously evenly turbid, becomes clarified; (*d*) the bacteria shrink up into the form of minute spherules; (*e*) lastly, the bacteria are definitely devitalized. Of these phenomena the sedimentation of the bacteria serves best as a criterion of the specific power of the serum, and the extent to which the serum possessing this specific power may be measured by determining how far the blood may be diluted before it forfeits its sedimenting property.

The subjects vaccinated by Wright and Semple were eighteen medical officers of the army, and in every instance was the sedimenting power of the blood developed within from one to four days. In the majority of cases the power was not lost after fifty- or even one hundred-fold dilution. If vaccination invariably produces the specific changes in the blood which have been described, the belief is not unwarranted that the vaccinated blood will exert such a deleterious influence on the bacilli of typhoid fever as will result in the effectual protection of the patient against that disease.

At present it is impossible to state the duration of the immunity thus artificially acquired, but judging from the extremely slow disappearance of the perfectly comparable sedimentation power which is acquired by undergoing an attack of typhoid fever, there is every reason to hope that the immunity which is conferred by these vaccinations may persist for a considerable number of years, and suffice to carry the young adult over the period of his extreme susceptibility.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

Pupillary Changes in the Insane.

Siemerling (*Berliner klinische Wochenschrift*, No. 44, 1896), discussing pupillary changes in the insane, notes first that inequality of the pupils is at times met with in healthy individuals, and that it occurs in general diseases of the most diverse nature. In 3010 cases of dementia paralytica the pupillary reaction to light was lost or diminished in 68 per cent. The Argyle-Robertson pupil is thus of great diagnostic importance in general paralysis, and is one of the very early manifestations of the disease. It is usually bilateral; a continuous unilateral loss of the light reflex is very rare. The outline of the pupil is various. The first change is generally a diminution of the reaction to light, then a total loss, followed by paresis and paralysis of reaction to accommodation. The qualitative change first noted by Gowers, whereby the pupils momentarily contract to light, then dilate, and respond no more was observed in a few cases of general paralysis unassociated with locomotor ataxia. Extremely rare is the dilatation of the pupil to light. The pupil may show considerable daily variability in size. Unrest of the pupil is rare. Nine thousand one hundred and sixty case of insanity, mostly general paralysis, were studied with regard to the presence of the Argyle-Robertson pupil. It was present in nineteen cases of senile dementia, but has also been found in old people of sound mind and body. Present in two cases of syphilis of the central nervous system; rare in chronic alcoholism. The presence of this phenomena in hysteria is an open question. The Argyle-Robertson pupil is a most important phenomena, and, while it does not always indicate locomotor ataxia or progressive paralysis, it is always to be considered as a manifestation of disturbance of the nervous system. General paralysis may develop many years after the Argyle-Robertson pupil. The loss of the light reflex during an epileptic seizure serves to distinguish it from an hysterical one. During anesthesia, unless the patient be quite aged, the reflex is usually present, but it is absent in general paralytics. The pathology of the phenomenon is at present but imperfectly understood.

Anomaly of the Heart.

Litten (*Centralblatt für innere Medicin*, No. 48, 1896) showed, at the Berliner Verein für innere Medicin, a 7-year-old child affected with intense cyanosis of the skin and mucous membranes. Other symptoms were enlargement of the liver and spleen, and albuminuria, referred to congestion and insomnia, apathy, chilli-

ness, and excessive uric acid excretion, referred to retardation of metabolic processes. Such cyanosis is always an indication of the presence of venous blood in the arterial system, usually dependent upon an abnormal communication between the left and right heart,—a patulous foramen ovale. In conjunction with this there is frequently present a pulmonary stenosis, assisting, by reason of excess of pressure, in the mixture of the venous and arterial blood. These conditions give rise to marked symptoms, all of which were absent in the child. Nor can the cyanosis be said to be due to a patulous ductus botalli. By percussion and auscultation no anomaly of the heart could be detected. Litten believes that the symptom-complex of the case is best accounted for on the supposition of that rare anatomical anomaly in which there is a transposition of the large arteries that spring from the base of the heart, the aorta arising from the right, the pulmonary artery from the left heart. Under such circumstances the pulmonary and systemic circulations would represent two independent systems. The oxygenation of the blood could not occur, and the child would die, did there not exist some communication between the circulatory systems. This is found in the lungs, which, as is known, normally contains both venous and arterial blood, the former from the pulmonary artery, the latter from the bronchial artery. In the case demonstrated, the opposite obtains: the bronchial artery carries venous, the pulmonary arterial blood. There may thus occur a slight oxygenation of the blood. There are in the literature twenty-four similar cases, one diagnosed ante-mortem. An important pathological fact in such cases is the post-mortem demonstrable dilatation of the bronchial arteries. Senator referred to the possibility of the aorta arising partly from the left and partly from the right half of the heart, whereby the symptoms of the case might be explained.

Carcinoma of the Pancreas.

W. Hale White (*Lancet*, December 26, 1896) reports two cases of carcinoma of the pancreas. The first was a man, aged 43 years, who complained of pain and tenderness in the upper part of his abdomen and wasting. About a month after the first observation, a hard lump could be felt in the abdominal wall on the right side at about the level of the umbilicus. This was thought to be a carcinomatous nodule, and the inference drawn was that it was a secondary deposit in the peritoneum. Later other nodules appeared. The man rapidly lost flesh and soon died of exhaustion. The necropsy revealed a primary cirrhous carcinoma occupying the whole of the tail of the pancreas with numerous secondary nodules in the liver and peritoneum. The pancreatic duct was neither pressed upon nor dilated, nor were the head of the pancreas or the glands in the portal fissure affected.

Case II was a man, aged 54 years, whose illness began with diarrhea, and who soon began to complain of pain in the upper part of his abdomen. One day he suddenly vomited a pint of blood, and again a few days later, and also passed blood by the rectum, and died the following day. He was not wasted. The diagnosis was thought to lie between cirrhosis and carcinoma of the stomach. At the necropsy the head and tail of the pancreas were quite healthy, but the centre was occupied by a large, hard, solid mass of carcinomatous growth, which was adherent to the stomach, and had ulcerated through it at a spot on the lesser curvature near the pylorus. Attention is directed to the fact that rigidity of the abdominal muscles means organic disease beneath them, and that in its early stages, at least, and sometimes during the whole of the patient's life, the only signs of malignant disease of the pancreas may be wasting, rigidity of the abdominal muscles, severe, deep-seated pain and tenderness, and vomiting, and the last, as in one of the cases,

may be absent. It must further be borne in mind that the growth is nearly always in the head of the gland, and as a result of this the common duct is pressed upon, the bile duct dilates, the liver becomes enlarged, the gall-bladder is, in at least one-third of the cases, distended, and it may be felt as a tumor projecting from underneath the liver, the patient may be jaundiced, his stools clay-colored, and he may show signs of cholemia. Constipation and fat in the stools also frequently occur. The only treatment is palliative.

The Association of other Micro-Organisms with the Diphtheria Bacillus.

De Blasi and Russo-Travali (*Riforma Medical*, Nos. 179 and 180, 1896; *Centralblatt für innere Medicin*, No. 50, 1896). The importance of the association of other micro-organisms with Löffler's bacillus is, since the publications of Roux and Yersin, well known, and frequently confirmed. De Blasi and Russo-Travali examined bacteriologically 234 cases of membranous angina. The most important result of the investigations was the demonstration of the association of Löffler's bacillus with the bacillus coli communis. The results of their examinations are as follows:

(1) Löffler's bacillus was absent in twenty-six cases, there being present staphylococci, streptococci, pneumococci, and bacilli coli communis. Two died,—one of meningitis. Excluding this one, the mortality was 3 84 per cent.

(2) Löffler's bacillus occurred alone in 102 cases; mortality twenty-eight, 27.45 per cent.

(3) Löffler's bacillus found in association with the staphylococcus pyogenes in seventy-six cases; mortality twenty-five, 32.89 per cent.

(4) Löffler's bacillus found with streptococcus pyogenes in twenty cases; mortality six, 30 per cent.

(5) Löffler's bacillus with streptococcus and pneumococcus (Fränkel's) in seven cases; mortality three, 43 per cent.

(6) Löffler's bacillus with bacillus coli communis found in three cases, all of which ended fatally.

This latter association gave rise to very severe forms of the disease, while it was found that filtrates of cultures of the bacillus coli communis did not increase the virulence of the diphtheritic toxin. The authors, therefore, believe that the bacillus coli communis, which is normally present in the body and produces no symptoms, may exert its virulence when the body is weakened by other infections (diphtheria), or having increased its virulence outside of the body, it then becomes dangerous when introduced into the body.

The Relation between Diabetes and Cirrhosis of the Liver.

Pusinelli (*Berliner klinische Wochenschrift*, No. 33, 1896) details the history of a patient, aged 48 years, who, in 1887, suffered an attack of jaundice lasting six or eight weeks. The following year sugar was discovered in his urine, to the extent of 1½ to 2 per cent. During an annually repeated "Carlsbad cure," the sugar disappeared from his urine, but after 1892 it was continually present. In 1893 icterus reappeared, and there developed ascites, edema of the legs, dyspnea, and wasting. The liver and spleen were much enlarged. At intervals of about eight or ten days the ascitic fluid was withdrawn; four times in all, and about ten litres each time. After the last puncture the fluid did again collect. The amount of fluid ingested

was at first greater than that eliminated, but eight weeks after the last puncture this relation was reversed. With the excessive excretion of urine the ascites and edema disappeared. The patient increased in weight and gained strength, the jaundice disappeared, and the liver decreased in size. The patient remained for a long time in good health, but lately there appeared albumin in the urine and edema of the feet. During the persistence of the ascites the sugar disappeared from the urine, to return again as soon as the ascites was gone. This is difficult to explain. Cannot be due to diet, as during the time the patient received no special diabetic diet, and such diet was previously without effect on the sugar. It is hardly to be supposed that the tapping alone, and the gradual escape of fluid for several days after the last puncture, can account for the care of the ascites. This may have been due to the large doses of cream of tartar (ten to fifteen grammes, t. i. d.) taken by the patient. The relation, the cirrhosis of the liver, and the diabetes are discussed. The former was first in point of time, as jaundice appeared a year before the sugar in the urine, and six years later again appeared. It is difficult to classify the cirrhosis, as it differs in many particulars from both Laennac's and Hanot's form. It may not inappropriately be considered a special form of hypertrophy of the liver with diabetes. Characteristic is the enlargement of the liver and spleen, periodical jaundice, ascites, prolonged course with tendency to recover, no gastro-intestinal symptoms, and in the reported case implication of the kidney. In all cases of diabetes, the liver should be looked to, and in cases of cirrhosis of the liver, diabetes sought for. The good effect of cream of tartar should be borne in mind. After two and a half years of good health the patient died. The necropsy revealed cirrhosis of the liver with some contraction, tubercles in lung, pleura, and peritoneum, diabetic kidneys, atrophy of the pancreas.

SURGERY.

UNDER THE CHARGE OF

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ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

Bowel Obstruction by a Gall-Stone Simulating Appendicitis.

Hurdcastle (*Maryland Medical Journal*, November 28, 1896) reports the case of a man, aged 56, weight 210 pounds, who had at times, for the past three or four years, suffered with slight pains in the region of the transverse colon and both iliac fossæ. A peculiar striking sound, as if water, drop by drop, was falling into a bottle, and again like a little stream passing with a gurgling sound, was noticed by the patient.

On the night of July 1 he was seized with sudden pain, accompanied with vomiting of a green, sweetish fluid, which soon changed to a brown color; there were also two or three small semisolid evacuations of the bowels; then there was a cessation of the pain and vomiting for several hours, when it returned with increasing severity.

Stercoraceous vomiting occurred on the fourth and fifth days, with great prostration. On the fifth day appendicitis was diagnosed, and an operation suggested, but the pain and vomiting suddenly ceased, and the patient made an uninterrupted recovery.

On the fifteenth day a large gall-stone was passed per rectum, and for several days later a number of smaller stones passed.

Cerebral Compression.

De Gaetano (*Atti della Soc. Ital. di Chirurg.*, 1896) details a series of experiments made by him with reference to the above subject on hens, guinea-pigs, rabbits, and dogs.

The *modus operandi* was to trephine and then exert pressure by the insertion of disks of bone, laminaria, or sponge, applying pressure thereon either digitally or with a special form of compressor.

In opposition to Bergmann, the author finds that the cerebral mass is compressible. After compression dilatation of the lateral ventricles and central medullary canal was observed. After severe pressure some degeneration of the nerve-cells was noticed. Medium and strong pressure caused optic papillary stasis; most marked on the compressed side, and blindness from edematous optic neuritis.

With regard to the circulation slight compression caused lowering of the blood-pressure, due to irritation of the vagus, but strong degrees of pressure raised the blood-pressure by stimulating the bulbar vasomotor centres.

Electrical irritation of the nerve-fibres of the dura mater and cerebral convolutions caused a diminution of the blood-pressure. The respirations were rendered shallow and infrequent, but if the vagi were divided they became very irregular.

The temperature was slightly lowered after pressure.

In general the author concludes that the effects of cerebral compression are due in the first place to the direct irritant action of the compressing body on the dura and brain, and in the second place to the indirect action of the augmented intracranial pressure of the cerebro-spinal fluid.

A Series of Cases of Appendicitis associated with General Peritonitis together with other Cases of Appendicitis operated on within the Year.

Mayo Robson (*British Medical Journal*, December 19, 1896), in an address upon this subject, states that the various pathological classifications of appendicitis are of greater scientific than of clinical importance when the question of operation has to be considered.

The author claims that early operation, undertaken as soon as appendicitis is diagnosed, would lead to a far greater percentage of recoveries.

The author arrived at this conclusion because the removal of an appendix before perforation, suppuration, and gangrene has occurred is practically unattended by risk, as shown by the experience of Treves and other surgeons. The operation can be accomplished through a small incision and with separation rather than division of the muscular fibres; whereas in waiting for resolution we not infrequently land ourselves in serious difficulties, and are obliged to operate under unfavorable circumstances.

The author describes the following varieties of appendicitis:

(1) Catarrhal.

(2) Suppurative, with or without perforation, or gangrenous, without perforation.

Catarrhal appendicitis furnishes the greater number of cases of recurrent appendicitis, and this is the variety which may and usually does recover without surgical treatment, although the subsequent attacks may be suppurative.

Suppurative appendicitis may run an acute or subacute course, but whatever form it assumes, whether with or without perforation, it demands operation, which, in the author's opinion, should be advised at the earliest possible moment.

The author states in these cases in which the onset is acute, rapid pulse, tenderness over the appendix without the presence of a tumor, the need for operation is immediate, while a more gradual onset, with a quiet pulse, and the early formation of a tumor, are signs that delay may be safe.

If, in the course of an appendicitis, at any stage a rigor with a rise of pulse and temperature occur, operation should be advised.

The temperature alone is of very little assistance, the pulse being the true guide for treatment.

Opium should seldom or never be given in the earlier stages, lest it mask the important symptoms which act as operative guides.

If opium has been given, it will be advisable for the surgeon to reserve his opinion, and if on withholding the sedative for a few hours the pulse has increased in frequency, and anxiety of countenance has declared itself, operation will be required.

Relief or cessation of pain, with marked rise in the pulse-rate, is an indication for immediate operation, as it usually indicates gangrene of the appendix.

In the subacute or catarrhal forms, the quiescent period, as advised by Treves, is undoubtedly the safest time to operate, probably from two to four weeks after recovery. With very few exceptions the operation should be made complete by removing the origin of the trouble.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Euchinin.

V. Noorden (*Centralblatt für innere Medicin*, November 28, 1896, and *British Medical Journal*) says that this new preparation possesses the curative properties of quinine without having its bitter taste or producing nausea, noises in the ears, heaviness, etc. It is formed by the action of ethyl-chlorocarbonate on quinine. Euchinin crystallizes in needles, and is soluble in alcohol, ether, or chloroform, but is with difficulty dissolved by water. The chloride of euchinin is easily soluble in water, the sulphate is less soluble, and the tannate least so. The base euchinin is tasteless unless it remains on the tongue for a long time, when it is slightly bitter. If given in sherry, milk, or cocoa, it produces no unpleasant taste. Healthy people can stand one gramme, and usually two grammes, without unpleasant effects. Once, two grammes caused a sensation of heaviness in the head. No unpleasant results were noted in patients, and no complaint was made during

the prolonged use of the larger doses of one to two grammes in the day. In the absence of cases of malaria, the author has tried euchinin in fifteen cases of whooping-cough, fourteen cases of hectic fever in phthisis, five cases of sepsis of various origin, in pneumonia, typhoid fever, and also in several cases of neuralgia. One gramme of quinine has the same action in whooping-cough and in febrile states as one and a half to two grammes euchinin. Beneficial and rapid effects were noted in twelve cases of whooping-cough. The temperature had a lower range in the fever cases after a few days. The results were especially good in one case of supra-orbital neuralgia. A dose of six-tenths of quinine or one gramme of euchinin gave relief when all other nervine tonics failed. This result was seen in eight different attacks. Euchinin is best given in tabloid form. In children it may be given in milk, soup, or cocoa. The tannate is much to be recommended. The author thinks that euchinin certainly deserves a further trial, and that it will prove an addition to our resources.

Injection of Carbolic Acid in the Tonsils for Recurrent Tonsillitis.

Kramer (*Centralblatt für Chirurgie*, No. 47, 1896) has employed for several years injections of carbolic acid into the tonsils for the relief of recurrent tonsillitis. He reports fifteen cases who have already been free from the disease for two years or more. The treatment is based upon the theory that recurrent tonsillitis is due to the retention of micro-organisms in the glands. The treatment was begun several weeks after recovery from an acute attack, and consisted in the injection of carbolic acid 1 : 40 for two or three days, until four to six injections had been given. After cocainizing the part the sterilized needle of the syringe was introduced one centimetre into the anterior pillar of the fauces, and if no bleeding followed, the carbolic solution was injected drop by drop, the needle being pushed in several directions, until fifteen minims had been injected. There was very little local reaction.

Gastric Ulcer treated by Rectal Feeding.

Ratjen (*Deutsche medicinische Wochenschrift*, December 24, 1896) has obtained brilliant results from the exclusive use of rectal feeding in gastric ulcer. The patient is confined to bed, and nothing is administered by the mouth except water, or pieces of ice in a little brandy and water if there is cardiac weakness. During absolute rest of the stomach the hydrochloric acid ceases to flow, and healing progresses rapidly. Each morning after emptying the bowel artificially, the following enema is administered: milk, 250 grammes; yolks of two eggs; red wine, one-half fluidounce; starch, one tablespoonful. This injection is repeated at noon, and again towards evening; the treatment being continued for ten days. Hot compresses are applied to the stomach for the relief of pain. Fifty-five cases were treated, and in three only was the cure incomplete. In doubtful cases the treatment may be employed with good hopes of success, since in other severe gastric affections, except cancer, it has been found most useful.

The Value of Antitoxin Treatment in Diphtheria.

Cuno (*Deutsche medicinische Wochenschrift*, December 24, 1896) reports the results of two years' experience with antitoxin in the treatment of diphtheria in Frankfort-on-the-Main. In 483 cases treated the mortality was 10.5 per cent., or, excluding the moribund cases, 7.03. In previous years the mortality was never

below 37 per cent. No local treatment whatever was employed. The nourishment was abundant, and, when found necessary, was administered through a tube. Heart-failure was treated by injections of alcohol and camphor.

Eucaine in Minor Surgical Operations.

Yarrow (*Medical Record*, January 9, 1897) offers the following report of the use of eucaine hydrochlorate in a series of thirty-five minor surgical operations, performed in the surgical dispensary of the Episcopal Hospital, Philadelphia.

A heat-sterilized aqueous solution of the drug was used, ranging in strengths from 1½ to 10 per cent. The part having been thoroughly prepared, an aseptic elastic ligature was applied, and ten to thirty minims were slowly injected by a hypodermic syringe into and about the point of operation. The ligature was retained until the operation was completed.

One of the advantages that eucaine possesses over cocaine is that, while the latter drug is decomposed during heat sterilization, the eucaine is not, and retains its full anesthetic power.

The ligature was applied, when possible, above the seat of operation, and in only two cases was any physiological action of the drug observed. These two cases had marked slowing of the pulse for about five minutes, the pulse being full and strong, about 56 to 63 per minute. Eucaine did not seem to produce ischemia of the part, such as is observed during the use of cocaine. After the removal of ligature, free bleeding occurred in nearly all the cases immediately. In this it differs from cocaine, which by its vasomotor constriction often delays hemorrhage.

Eucaine may be used successfully in all of the minor surgical operations in which cocaine has been employed. It appears to have advantages in that it can be rendered sterile in solution by boiling. Its physiological effects are slight, if any, when used in moderate quantities. There appears to be no throbbing pain after operation. In the average case, twenty minims of a 4-per-cent. solution are required to produce complete and satisfactory anesthesia.

OBSTETRICS.

UNDER THE CHARGE OF

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ASSISTED BY

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Endometritis Decidua Polypora et Auberosa.

Bulius (*Münchener medicinische Wochenschrift*, p. 537, 1896) reports the case of a primipara, aged 21 years, who gave birth to a dead child in February, 1895, and suffered for six weeks after with a continuous discharge of blood. The menses then were regular till September. In the beginning of December she again suffered from hemorrhage, and on the 7th from pains similar to those of labor, with the expulsion of clots and shreds. Included among these was a fragment of decidua and an ovum surrounded with reflexa. The curette removed more decidua,

after which she made a good recovery. Bulius regards the case as one doubtless of hyperplasia of the decidua vera, which was expelled as an almost quadrangular patch, six centimetres broad and eleven centimetres long. There were thickenings in the inner fetal surface in the form of bosses and polypi with more or less defined pedicle. Bulius adds that histologically the growth arose from the decidua cells of the compact or cellular layer, and that no growth of the glands had taken place except in the deepest layers. There was no ground for supposing the affection to be specific.

Hysteria Simulating Eclampsia in Pregnancy.

Bescarlet (*L'Obstétrique*, November 15, 1896), at the Geneva Congress, reported the case of a pregnant woman who contracted a cold and suffered from an inflammation of the kidney. The fetus died and several convulsive attacks followed. Bescarlet believes that these were purely hysterical, basing his belief upon the observation that they punctually recurred at a certain time for several successive nights. They differed from mild eclampsia by the absence of vomiting, coma, deranged vision, and facial convulsions.

Injuries to the Child during Labor; Cerebellum forced into the Pleural Cavity.

Hiebaum (*Präger medicinische Wochenschrift*, xxi, 5, 1896) refers to a case of labor in a dutipara at the eighth month of pregnancy, in which podalic version was resorted to on account of placenta previa, and the child was forcibly extracted by the hand. It could not be revived, and was found to have suffered a fracture of the occiput and of the vertebral column. On incising the tentorium, nothing could be found of the cerebellum but quite a small fragment; the remainder was found suspended in the form of white particles like sand in about twenty cubic centimetres of bloody serum in the left pleural cavity. This peculiar injury was doubtless caused by the obstetric interference.

Fatty Degeneration of the Uterus during Pregnancy.

L. M. Bossi (*Annali di Ostetrica e Gynecologica*, December, 1896) found the process of fatty degeneration of the muscular fibres of the uterus in active process in three human uteri, one removed at the eighth month of pregnancy and the other two at term. He inquires whether this is the physiological condition, and, if so, whether it may not explain the wonderful rapidity with which involution of the uterus after labor normally takes place. It may be asked, further, whether in this fatty degeneration there exists an explanation of some cases of inertia uteri in labor. Bossi has attempted to investigate the subject by the experiments on animals of tying the uterine blood-vessels, but does not regard the results as applicable to the human uterus.

Dangers of Membranous Insertion of the Cord.

Lefèvre (*Thèse de Paris*, 1896) describes 151 cases in which the cord lost itself in the membranes some distance from the edge of the placenta, which he has collected from the literature. The condition is most frequent in twin pregnancy. It exposes the fetus to dangers during pregnancy as well as in labor. It may involve premature rupture of the membranes during gestation; no other reason could

be found in at least six cases. Membranous insertion of the cord may cause premature labor, and Lefèvre believes that this anomaly of the funis explains certain cases of hydramnion and fetal dropsy. In labor Lefèvre finds that some cases of premature rupture of the membranes is due to membranous insertion, but it appears that this is not so frequent an accident in labor as in pregnancy. Membranous insertion is a predisposing cause of prolapse of the funis; in two out of the 151 cases the fetus was killed during labor through this anomaly, but it must be remembered that in both the death was due to pressure on the membranous insertion, and in no instance to tearing off the cord. It would seem, in fact, that a labor-pain would not cause the fetus to tear off a cord of this kind, though it is easy to understand how it may cause great danger from pressure.

Ovarian Abscess after Delivery.

Bröse (*Berliner klinische Wochenschrift*, No. 52, 1896) mentions the case of a woman who had high temperature after confinement, which subsided, but the accompanying severe pain continued. At the end of three months he operated, removing both appendages. The right ovary was replaced by an abscess as large as a walnut. The left ovary contained a similar quantity of pus. The left tube was also suppurating. Recovery was rapid.

GYNECOLOGY.

UNDER THE CHARGE OF

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ASSISTED BY

H. D. BEYEA, M.D.

The Treatment of Chlorosis with Ovarian Substance.

Spillmann and Etienne (*Gazette Médicale de Paris*, No. 35, 1896) state that the ovaries have the following functions: (1) Ovulation; (2) through the menstrual hemorrhage organic toxin is removed from the body; (3) they are important in the general nourishment, similar to the testicles in man. If chlorosis is a disease of the ovaries these functions must be disturbed if the body is by any method supplied with ovarian substance, these functions must be restored. With this aim the writer has administered ovarian substance, as described by Brown-Séquard. After the first treatment the patients complained of pain in the lower abdomen, discomfort, headache, and muscular pain. Two had fever and rapid pulse. In three patients the result was good. The general health was improved, the anemia disappeared, the number of blood-corpuscles were increased and the menses returned.

Adenoma Cervicis Malignum Cysticum.

Knauss and Camerer (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxxiv, Heft 3) report the following case of cervical polyp and malignant adenoma

of the cervix uteri. The patient was 46 years of age. For five weeks she had complained of uterine hemorrhage. A polyp the size of a hazel-nut, having a pedicle, was found protruding from the cervical canal. It was excised, but since its appearance was that of a benign tumor, no microscopical examination was made. The woman returned a month later, and at the site of insertion of the pedicle of the previously removed polyp there was found a small round tumor, which proved to be a malignant adenoma. The uterus was removed *per vaginam*. Two and a half years later the patient was perfectly well. The microscopical characteristics of the disease are thoroughly described. The writers were only able to find six cases of malignant adenoma of the cervix reported in the literature. This case teaches anew how cautious we must be in judging the nature of uterine polypi.

Smith (*Médecine moderne*, No. 69, 1896) also reports a case of malignant adenoma of the cervix uteri in an unmarried woman, 34 years of age. The diagnosis was made by microscopical examination of tissue removed by the curette. The uterus was removed, and after six months there are no signs of a return of the disease.

The Results of Forty-seven Hysterectomies for Carcinoma of the Uterus.

Russel (*Semaine Gynécologie*, No. 10, 1896; *Centralblatt für Gynäkologie*, No. 2, 1897). In forty patients the uterus was removed *per vaginam*, in seven *per abdomen*, and four by the combined method. Five patients (10 per cent.) died from operation; sixteen (34 per cent.) died within eighteen months from return of the disease; twenty-one (44 per cent.) are still living; one died eighteen months after operation of heart failure, and four have not been heard from. Of the twenty-one patients who are still living, sixteen have been free from a return of the disease,—more than two years. One of these returned three months after operation with the wound infected with carcinoma. The nodule was excised, and now, two and a half years later, she is perfectly well. In two patients there was metastasis to the mamma. Nine patients were operated upon for carcinoma of the body of the uterus. Seven of these are still living. One died from operation and the other from a return of the disease. Of thirty-seven patients operated upon for carcinoma of the portio vaginalis, fourteen are living. Three are free from a return after four years, and also four after more than three years. The writer says that carcinoma of the uterus usually returned within eighteen months, but that it may return after four years. The prognosis is better in carcinoma of the body of the uterus than in carcinoma of the portio vaginalis.

A Case of Tubercular Salpingitis.

Heydenreich (*Semaine Gynécologie*, No. 15, 1896; *Centralblatt für Gynäkologie*, No. 52, 1896). The patient was 39 years of age. She had complained of pain in the lower abdomen for two and a half months. There was no history of gonorrhea or puerperal infection. Over the apex of the left lung numerous coarse *râles* could be heard. From the presence of this pulmonary disease it was thought that the tubal disease might be tubercular. Celiotomy was performed, and a pyosalpinx the size of a small apple, having a caseous mass the size of a dime on its superior surface, was found. The neighboring peritoneum also contained several small caseous masses and two grayish yellow granulations. The histological study of sections from the tube determined the diagnosis.

A New Method of Preparing Catgut.

Brose (*Centralblatt für Gynäkologie*, No. 52, 1896), at the meeting of the Berlin Obstetrical and Gynecological Society on November 13, 1896, advises the following new method for sterilizing catgut. The catgut wound on glass rollers is first placed in juniper oil or turpentine, in a vessel having a stopper which will not allow steam to enter. The vessel is then placed on a water bath (the water being cold) and heat is applied for one-half hour. These ethereal oils, which boil at a temperature of from 155° to 160° C., reach a temperature of from 99° to 100° C. in the half hour. In these thus heated ethereal oils all bacteria, including the anthrax bacillus, are destroyed. This the writer proved by a thorough bacteriological investigation. The catgut retains the strength, and, besides, it is free from fat and water. These oils are also strong disinfectants. Since catgut taken directly from the oil would be difficult to handle, and, again, since the oil would irritate the tissue, he advises that the catgut be placed, just before operation, in a 1 : 1000 alcoholic solution of the bichloride of mercury. Brose has employed catgut thus prepared for three months with perfect satisfaction. Schaffer, in the discussion, stated that only fresh juniper oil should be employed, as this alone had the power to disinfect.

PATHOLOGY.

UNDER THE CHARGE OF

JOHN GUITÉRAS, M.D.,

ASSISTED BY

DAVID RIESMAN.

Peculiar Blood-Changes in Purpura Hæmorrhagica.

Bensaude (Société médicale des Hôpitaux, Séance of January 15, 1897, in *Semaine Médicale*, January 20, 1897) confirms Hayem's observation of the absence of retraction of the blood-clot and of the formation of serum in sixteen cases affected with various forms of purpura hæmorrhagica, all of which presented large cutaneous ecchymoses and hemorrhages from the mucous membrane.

Purpuras in which the hemorrhages were small did not present the blood anomaly. The author has succeeded, though the researches are not yet completed, in producing the blood lesion and hemorrhages in animals by the injection of the blood of a purpuric patient. [We may add that Müller and Denis have observed absence of blood-plaques in cases of Werlhof's disease.]

On Certain Toxic Lesions of the Posterior Columns of the Spinal Cord.

Redlich (*Centralblatt für allgemeine Pathologie und pathologische Anatomie*, December 15, 1896) presents a critical digest of the spinal lesions in various intoxications. In cases of *ergot-poisoning*, in which psychoses of different kinds, epileptiform attacks, and phenomena resembling those of tabes are the chief symptoms, the principal lesions found were sclerosis of the posterior roots and posterior

columns. In *pellagra*, a disease produced by the ingestion of spoiled maize, the lesions found by Tuczek resembled those of a combined sclerosis, and were most intense in the upper part of the cord, gradually diminishing lower down. Neither the posterior roots nor the gray matter was involved. The symptoms, if we might allude to them here, were chiefly of a paralytic and spastic nature; disturbances of sensation, ataxia, and myosis were absent. Regarding lesions of the posterior columns in *infectious diseases*, the observations are surprisingly few, but they suffice to show that, as in the other cases, the posterior system-tracts have a special vulnerability to the influence of toxic agents. So far such lesions have been found positively only in diphtheria. This is important and interesting, since it has been customary to ascribe all the nervous complications of that disease to multiple neuritis.

Lesions of the posterior columns are also met with in *chronic intoxications* and in *polyneuritis*, and the author cites cases of the latter affection (some dependent on alcohol, others on lead), in which sclerosis of the posterior columns was found. The question as to the relation of the spinal lesion to the affection of the peripheral nerves cannot be answered positively. Some maintain that the former is secondary, either by direct extension of the process along the sensory nerves through the spinal ganglia into the cord or in other ways. Redlich, however, believes that the two lesions are co-ordinate; in other words, that the same noxious agent acts on the peripheral nerves and on the posterior root-system of the cord; that there is, in short, a lesion of the entire sensory neuron.

The author next considers the changes in the posterior columns in *pernicious anemia*, *leukemia*, etc. Since Lichtheim first called attention to these changes, quite a large number of cases has been reported, and a study of these leads to the conclusion that grave anemias of different etiology may produce similar cord-lesions. These lesions are focal degenerations in the posterior columns, which may coalesce and lead to ascending degeneration; the posterior roots and the fibres in the gray matter escape. The process is not strictly symmetric, involves the cervical cord more than the other parts, and presents histologically acute degeneration of the nervous tissue with secondary hyperplasia of the neuroglia. The anemia is not directly the cause of these changes; the latter are probably due to toxic substances circulating in the blood. The last subject dealt with is the lesions of the posterior columns in *diseases of metabolism* and *constitutional diseases*. Sandmeyer, Leyden, and Williamson describe cord-changes in *diabetes mellitus;* Lubarsch, in six cases of *gastric cancer*, found changes in the posterior columns, once also small foci in the lateral tracts, and is inclined to attribute them to the absorption of decomposed gastro-intestinal contents. FLEINER describes macroscopic changes of a doubtful nature in the posterior columns in two cases of *Addison's disease.*

From the foregoing facts we can draw the conclusion that there are poisons of exogenous and of endogenous origin that are capable of producing a primary degeneration of the nervous structures, especially of the posterior columns. From the point of view of the localization, two groups are recognizable,—one, exemplified by the lesions in pernicious anemia, presents disseminated foci of degeneration; in the other, as, *e.g.*, in ergotin-tabes, the degeneration is systemic, affecting the posterior roots and their tracts. But it is to be noted that in no case was any reference made to disease of the spinal ganglia which could explain the involvement of the posterior roots.

In concluding, Redlich points out that these facts may have an important bearing on our conception of tabes, and implies that in them we may perhaps find support for the theory of the toxic origin of that disease.

A New Method of Determining the Alkalinity of the Blood.

Berend (*Zeitschrift für Heilkunde*, xvii, Heft 4, p. 351) recommends the following method: After cleansing the pulp of the finger, a prick is made with a sticker or needle. The blood is drawn into the mixer, up to the mark 0.1, and the latter then emptied into a centrifuge-tube (see figure) containing five cubic centimetres of a 1-per-cent. neutral NaCl solution, and washed out by repeatedly sucking up this solution. The latter is then at once centrifuged, and the clear serum solution poured into a glass vessel. To the corpuscular mass remaining ten cubic centimetres of water (neutral) are added, and the mixture placed aside. The serum solution is mixed with litmus so that it is not too highly colored, and titrated with an acid solution, and back with sodium hydrate. The mean of the two figures is taken as the result.

Centrifuge-Tube.
The spheric projection ought not to have a capacity of more than 0.20 cubic centimetre.

The corpuscle mass is then poured in a porcelain dish, the tube rinsed with five cubic centimetres of water, and litmus added until the red color is completely obscured. To the bluish-green, opaque mixture the acid solution is added in excess; after stirring the mixture is titrated with sodium-hydrate solution, drop by drop. Sufficient has been added when the solution has lost its red color and is again opaque. The last drop (0.05 cubic centimetre) is deducted, and the difference between the acid and the alkali used determined. The sum of the estimations of the serum and the corpuscles represents the total alkalinity.

The double titration referred to above is performed by first titrating with a centinormal sulphuric-acid solution; an excess of acid is then added, and the solution titrated back to the blue color with a one-fiftieth normal sodium-hydrate solution.

BOOK NOTICES.

The Surgery of the Chest. By Stephen Paget, M.A. (Oxon.), F.R.C.S., Surgeon to the West London Hospital, etc. New York: E. B. Treat, 1897.

In spite of the rapid multiplication of works on surgery, no apology need be offered for the appearance of this volume. The chest is one of the newer fields of surgical work, one in which rapid progress has been made in the past two or three decades. The results already obtained have been very gratifying, and point to a future of greater scope and activity. A collection of the work already done, and a consideration of the evidence thus brought out cannot fail to serve a useful purpose in directing our efforts in the future.

The subject is considered under two divisions: Part I being devoted to injuries of the chest, and Part II to diseases of the chest. In the former are included "surgical landmarks" and "malforma-

tions," in addition to the various injuries to which the chest and its contents are subject. Having described the various injuries, the author proceeds to give the treatment which he considers appropriate. No attempt has been made to describe the different recognized methods, but it must be said that the teaching is usually in accord with the most advanced thought. In the treatment of fractures of the ribs, a bandage is preferred to strapping. This is, we think, contrary to the prevailing custom in this country. Mr. Paget very wisely cautions against unnecessary examinations in injuries of the chest. He abstains from the temptation to move the patient about in order to make a fine diagnosis, and he prefers, as a rule, not to explore wounds with the finger or probe more than is absolutely necessary.

The author is opposed to aspiration in the treatment of empyema. Bulau's method is described, but not recommended. Incision, it is claimed, is the only rational treatment, and it is usually necessary to resect a portion of a rib in addition in order to secure perfect drainage. Opposition is made to irrigation of the pleural cavity after the incision, and also in the after-treatment except in rare cases, and then the greatest gentleness should be used. The question of irrigation after evacuating an empyema is still under debate, but all will agree that only the mildest force of a very weak antiseptic solution, of proper temperature, should ever be employed. Surgeons on this side of the Atlantic will be gratified to read that the "perfect tube" for securing drainage in these cases has been discovered. It is described on page 236.

Dr. Ewart's twelve signs of pericardial effusion are given. They merit careful study.

The author has quoted numerous cases, and has treated the subject in greater detail than would be possible in a general surgery; the result is a valuable addition to surgical literature.

M. Réclus's address on the same subject before the French Surgical Congress in 1895 appears in a translation, and will be much appreciated.

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MEDICAL MAGAZINE.

APRIL, 1897.

CASTRATION AND VASECTOMY IN HYPERTROPHY OF THE PROSTATE.[1]

By J. William White, M.D.,

Professor of Clinical Surgery in the University of Pennsylvania.

(Reported by George D. Morton, M.D.)

Gentlemen: On several occasions recently individual members of the class have asked me where they could procure a condensed statement of the history and present position of the operation of castration for the relief of prostatic hypertrophy. I have decided *apropos* of the present case, on which I shall presently operate, to answer these questions as briefly and succinctly as possible.

Any extended consideration of the history of the operation would be out of place in a clinical lecture, but in explanation of the fact that many interesting practical points are still undetermined I may say that the idea of practically investigating the subject did not take definite shape with me until as recently as the fall of 1892, when I was asked to prepare an address on the surgery of the hypertrophied prostate for the coming meeting of the American Surgical Association in 1893. I then spoke of the matter to Dr. John S. Billings, who conveyed the request to me. I undertook to embody in my paper the results of my inquiry.

In December, 1892, I requested one of my assistants, Dr. Kirby, to make a series of experiments on dogs with a view to determine whether or not castration would be followed by notable atrophy of the prostate. The thought that this was possible had been suggested to me by the comparison long ago made by Velpeau and afterwards

[1] Clinical lecture delivered at the Hospital of the University of Pennsylvania.

by Sir Henry Thompson between prostatic and uterine fibromyomata. Control observations as to the weight of the normal prostate in dogs were begun at once. The first castration was done January 27, 1893; the others followed at intervals of a few days. The results showing rapid atrophy, first of the glandular and then of the muscular elements, were so decisive that I embodied in the paper I was writing, and which I read before the American Surgical Association, June 1, 1893, the suggestion that castration might be a valuable therapeutic measure in many cases of hypertrophied prostate. This suggestion had never before been laid before the profession.

The question of priority has been discussed occasionally. A Norwegian, named Ramm, published in September, 1893, a short account of two operations of the kind that he had done earlier in the year, and promised a full report later, but his paper on the subject, in which he claimed priority, did not appear for almost a year, and then was merely a rehash of my own article and of others previously published. It seems probable that a Russian, named Sinitsine, had had the same idea and had acted on it still earlier, but the fact remained unknown to the profession. A Frenchman, named Launois, states that he once years ago made the suggestion to his "dear master," Professor Guyon, but that owing to the non-approval of the latter he dropped it and did nothing. An Englishman, Mr. Moullin, said after my paper appeared that he once suggested the operation to a patient who declined it, but he had never before made allusion to the circumstance.

These are the facts as to the date and manner of introduction of the operation. Believing it to be an addition of some value to the resources of surgery in a most distressing and extremely prevalent disease, I not unnaturally would like to receive in the records of our profession such credit as may properly belong to me for having aided in the saving of life and the diminution of suffering. Pardon me, therefore, if in concluding these preliminary remarks I quote from an article written by a well-known American surgeon, Dr. Pilcher, the editor of the *Annals of Surgery*. He says, "These questions of priority of mental conception, of suggestion, or even of actual performance are of little importance. As far as the surgical world is concerned, the fact is undeniable that the general serious consideration of the possible value of the removal of the testicles as a therapeutic measure in the treatment of prostatic hypertrophy dates from June 1, 1893, when J. William White read his paper upon 'The Present Position of the Surgery of the Hypertrophied Prostate' before the American Surgical Association."

Mr. Jacobson, of London, says, "It is to Dr. White that our

profession is indebted for first collecting and publishing with unmistakable clearness the evidence—clinical, pathological, and experimental—which would justify a resort to this operation."

Similar quotations might be made from the writings of Mr. Reginald Harrison, Sir Joseph Lister (now Lord Lister), and others; but this side of the subject has perhaps more interest to me personally than it has to you as my pupils or to the profession at large, and we have spent time enough upon it.

You can, of course, readily understand that with so recent an origin and development there yet remains much to learn about the exact application of the operation in cases of prostatic overgrowth. I believe that like many other advances in surgery it has been attended at its inception with certain extravagances.

The indiscriminate oöphorectomy of a few years ago, when all sorts of vague nervous symptoms were held to justify the removal of the ovaries, which were said to be pathological if a minute cyst or a slight fibroid change could be found, is happily a thing of the past.

The urethra was recently subjected to an assault of the same character, and strictures in enormous numbers were diagnosed and cut in a part of that canal in which they are very rarely demonstrated at autopsies, and in which, as a matter of fact, they did not exist. This also has fortunately subsided to a great extent.

At the present time we are threatened with a similar experience with the appendix. A pain in the right iliac fossa and ill health from other causes are constantly yoked together to justify the removal of an appendix, and this is said to be diseased if a little constriction or a small fecal concretion can be discovered, though such conditions are constantly found post mortem in persons who never had the slightest symptom of appendicitis.

The "appendix specialist" of to-day will often be found to have been the discoverer of strictures and the remover of ovaries of a few years ago.

Now I have no doubt that the operation of castration for prostatic hypertrophy has undergone—and must undergo—a similar experience in the hands of these same operators, but I take pleasure in believing that neither in my introduction nor in my advocacy of the procedure have I encouraged the idea that it is a universal panacea for prostatics. Let us try to begin at the beginning in our consideration of the subject.

The remarkable frequency of the condition makes it apparent that at any one time those persons suffering from it must be divided into several classes; they cannot all present indications for or against one particular method of treatment. This is elementary.

Sir Henry Thompson found that one man of every three, over 55 years of age, examined after death, showed some enlargement of the prostate; one in every seven had some degree of obstruction present; while one in fifteen had sufficient enlargement to demand some form of treatment. In this country to day, as shown by the last census, there are more than three millions of men over 54 years; of these, according to Thompson's estimate, which genito-urinary specialists consider a conservative one, about 200,000 are sufferers from hypertrophy of this gland.

I use the word "sufferers" advisedly, as indicating that some definite subjective symptom is present. We will thus at once leave out of consideration those cases—not very infrequent—in which an enlargement of the prostate is found, accidentally as it were, during examination for other conditions, and those in which Thompson says "some degree of obstruction" is present, meaning a comparatively slight and almost symptomless interference with the exit of urine or the entrance of instruments. The classification of the remainder could be made in a great variety of ways, but for our purposes at this time let us select four chief symptoms and four associated conditions, and try to arrange the cases in accordance with them.

(1) The condition of the prostate as to size and density.
(2) The amount of pain.
(3) The amount and character of residual urine.
(4) The frequency of catheterism and its ease or difficulty.

As secondary conditions let us note—

(1) The age.
(2) The sexual power.
(3) The condition of the kidneys.
(4) The general condition.

Let us now consider with special reference to castration the chief groups into which, with regard to these symptoms and conditions, our 200,000 prostatics can be divided. It is evident that no such division can be exhaustive, as all sorts of combinations of the above symptoms are possible, but I shall try to include the main groups of prostatics as seen in practice.

Group A.—In this group we can put the patients who have moderate enlargement, little or no pain, clear residual urine to the extent of three or four ounces, and who have not begun to use the catheter.

If, in addition, such a patient is not very old, retains his sexual power, has sound kidneys, and is in good general condition, it seems obvious that castration is not to be considered. It is necessary to state this, however, as I have seen cases answering this description

in every particular who had been advised to submit to removal of the testicles.

Such patients should be instructed in the use of the catheter, which should be introduced once in every twenty-four hours. It should be employed only with the most minute antiseptic precautions. The urine should be examined at regular intervals and every effort should be employed to keep it sterile.

Unfortunately, all but a small percentage of the patients who belong in this group when they first come under notice will sooner or later pass into another and less favorable one; but so long as they develop no other symptoms or conditions the indications are sufficiently met by catheterism. Departures from this type may, of course, take place in any one of the above-mentioned directions. For example, the *enlargement* may be decided as felt per rectum, but that of itself need not modify the advice given if the other conditions are all favorable. The *pain* may be marked. If it is excessive and resists the use of small doses of the bromides, of belladonna, of phenacetin, etc., it may of itself indicate operation. In such a case vasectomy should be selected. The *residual urine* may be six or eight ounces or more. It is then well to catheterize once in twenty-four hours for every three ounces above the original three, and once more for each additional two ounces. If the residual urine is twelve ounces or more in a patient who otherwise would belong to Group *A*, and if it does not diminish considerably after the beginning of regular catheterism, the dangers from backward pressure on the kidneys increasing atony of the bladder, and a probable catheter cystitis are so great that vasectomy in the hope of reducing the obstruction is again indicated. If the introduction of the catheter proves to be difficult and painful and does not become less as time goes on, the same indication exists.

Group B may be said to include patients with larger prostates,—the size of a lemon may be taken as about the minimum,—with eight or ten ounces of residual urine, fetid or filled with muco-pus, with frequent urination, and with some difficulty and pain in the introduction of the catheter. In these cases some form of operative interference is clearly indicated. The choice lies between vasectomy, castration, and prostatectomy. The selection of one or the other of these procedures should be based largely upon the secondary conditions above mentioned. The younger the patient, the greater the sexual power, the freer the kidneys from degenerative or infectious changes, and the better the general health, the more the surgeon should incline towards prostatectomy. If the patient is somewhat older, the symptoms remaining the same, but the sexual power be-

coming enfeebled, vasectomy is to be chosen in the majority of cases. Still greater age with very marked renal disease or with very great deterioration of general health indicates the same operation. If, however, with greater age and distinctly lessened sexual power the renal and general conditions are good, castration promises the most benefit with the least mortality.

A factor of uncertain but undoubted importance in these cases is the density of the prostate. I have now seen several very hard prostates shrink after castration, but they do so more slowly and less completely than glands of the same size that are softer or more succulent.

It should be remarked, therefore, that unusual hardness of the prostate in cases belonging to this group should weigh in favor of prostatectomy.

Group C may be said to include a still more serious class of cases in whom the prostate is very large,—from the size of a small orange to that of a base-ball,—retention of urine is nearly or quite complete, cystitis is marked, and the introduction of a catheter is very difficult or painful.

In such patients the general health is almost always markedly affected, and even although the urine gives no distinct evidence of renal degeneration, it may be confidently assumed that the kidneys are crippled from the results of backward pressure. The patients are usually of advanced age—65 to 80—and much older than their years.

General atheroma is apt to be present. The sexual power is lost or, if not, the sufferings of the patient have rendered the question of its preservation an unimportant one.

In these cases castration is the operation of choice, although in many of them vasectomy may first be tried with propriety if the general condition is excessively poor. I have no doubt that, while the mortality of any operation whatsoever on such persons will always be unusually high, these two will ultimately prove to be followed by death far less frequently than any of the forms of prostatectomy. Here again, however, the density of the prostate will probably influence the final result, and if very marked is to be regarded as an unfavorable circumstance.

In *Group D* we may finally place the desperate cases not included in the former classes,—those in which the prostate is enormous, the cystitis excessive, the bladder dilated and atonied, the retention absolute, catheterism difficult and occasionally impossible. Such patients are generally of advanced years, and are suffering from marked toxemia,—a combination of uremia and sapre-

mia. The kidneys are functionally very inefficient. General atheroma is extreme. It is needless to say that these conditions render any operative interference a matter of distinct risk. But whatever the danger the suffering of the patient is so great that the risk must be freely taken by the surgeon, and will usually be accepted by the patient. It is my belief that castration under these circumstances offers far more hope of material benefit and with distinctly less risk than any other operation. It will, of course, always have a high mortality. The death-rate now attributed to it comes largely from its performance in cases of this type. It will occasionally fail to do good. But, on the other hand, I have often seen an improvement—and many such cases have been reported—that was simply marvellous, the obstruction disappearing, the cystitis vanishing, the power of voluntary urination returning in patients in whom such results would have been thought almost beyond the limits of possibility.

There are special complications which may influence the choice of operation. Among these vesical calculus should be mentioned. The possibility of operating in the presence of an undetected calculus does not seem to me a very grave objection to the operation. The most unfavorable subjects for litholapaxy and for all forms of lithotomy are the advanced prostatics with cystitis and deep post-prostatic pouches. If castration will, in even a minority of such cases, mitigate the vesical inflammation, and wholly or partially obliterate the cul-de-sac behind the prostate, it will certainly be deliberately adopted as a preliminary operation by many surgeons. I have done this in several cases with the most satisfactory results.

If the stone chanced to be found after instead of before castration, I cannot see that any serious difficulty would follow. Its removal would certainly be an operation both easier and less dangerous if prostatic atrophy had occurred. Of course, the surgeon who, *in the absence of prostatic hypertrophy*, did castration for the relief of symptoms due to vesical calculus would make an inexcusable blunder, but such mistakes do not occur in experienced hands.

Suppuration of the testicles or of the prostate or of both—a not infrequent complication—influences the prognosis as to life somewhat unfavorably, but otherwise should be regarded as an additional indication for castration. Stricture of the urethra, if of small calibre and not easily dilatable, indicates a perineal urethrotomy combined with a prostatectomy carried out through the same wound.

Diabetes contraindicates all operations unless catheterism is impossible. Then a suprapubic fistula should be established through the smallest possible wound. Opium or codeine should be freely given.

Patients will constantly inquire as to the effects of the operation on their physical and mental characteristics later in life. These very natural questions may be confidently answered in the most reassuring manner. I have never seen a case that survived in which any permanent change was noticeable. As an immediate sequel of the operation, however, a form of delirium, usually maniacal, sometimes quiet, has been noticed by several observers, including myself. I am somewhat inclined to the opinion that this has special relation to the whole condition, including the operation. But I have seen it after other operations on aged people, and I cannot find that it has ever been specially noted as following castration for testicular disease or injury. The question must be regarded as *sub judice.* It is often recovered from, but is an unfavorable symptom.

As to the prospects of cure after the operation, it may be said that we may in every thirteen cases of recovery count upon eleven being complete cures, in the sense of shrinking of the tumor, one being improved, and one being unsuccessful. Or, to state the situation more fully, clinical experience justifies the assertion that, in a very large proportion of cases (thus far in approximately 87.2 per cent.), rapid atrophy of the prostatic enlargement follows the operation; and that disappearance or great lessening in degree of long-standing cystitis (52 per cent.), more or less return of vesical contractility (66 per cent.), amelioration of the most troublesome symptoms (83 per cent.), and a return to local conditions not very far removed from normal (46.4 per cent.) may be expected in a considerable number of cases.

The general mortality from castration has been large,—18 per cent.,—and from vasectomy 12 per cent., but it must be remembered that large numbers of patients belonging in Class D, or even worse than those there described, patients actually dying from uremia or sepsis, have been subjected to these operations. Many of these should be excluded in an attempt to ascertain the legitimate mortality in patients operated upon under surgically favorable conditions,—*i.e.*, before the actual onset of uremia, or, better, before the kidneys have become disorganized by the two factors rarely absent in advanced cases,—backward pressure and infection. This leaves a mortality of 6 or 7 per cent., which will probably be decreased as advancing knowledge permits of a better selection of cases. It is important to note that even in the desperate cases which make up the series of

deaths, 75 per cent. showed improvement of symptoms or shrinkage of the prostate before they died.

It is certainly and undeniably true that in many of the deaths the operation simply failed to save life, although the fatal termination was probably accredited to it by the friends of the patient, as is commonly the case, and by the advocates of other operations, which is scarcely less common.

As to comparison with other operative procedures I may quote to you the recently published views of Mr. Jacobson, a distinguished London surgeon. He says, "Compared with prostatectomy, the very much smaller risk, the greater simplicity, ease, and quickness of castration, the far smaller amount of anesthetic, are too obvious advantages of castration to need more than mention. As to drainage, castration does away with the inconveniences of any fistula, and the noisome leakage which may be inseparable from it. On the other hand is the repugnance which so many men, even when well on in life, feel towards parting with their testicles, a repugnance which we shall often have to meet, and which will frequently baffle us, but one for which the patient alone must be responsible, when it has been clearly put before him how, having advancing enlargement of the prostate, he stands on the brink of a precipice, and that it requires a very little indeed to send him over."

I believe I will add to the practical value of this lecture to you if I also read to you Mr. Jacobson's summary of his views as to the selection of cases for castration, as it will give you another form of classification of these patients which will aid you in determining upon the advice to offer them.

He says, "The cases to which, in my opinion, the operation is most called for fall into two groups. (*a*) The more urgent, where (1) previous appropriate treatment, carefully carried out, has failed; (2) where there have been one or more attacks of retention; or (3) where hemorrhage has taken place,—in either case the peril of cystitis, too often fatal here, is enormously increased; (4) where there is inability to micturate, or where this is painful or frequent; (5) where the passage of the catheter is increasingly difficult, with the risks of hemorrhage, formation of false passages, etc.; (6) where the prostate is soft and elastic, not densely hard and fibrous,—in such cases marked relief may be expected. Of course, the greater the power of voluntary micturition which remains, the more natural the urine as to urea, specific gravity, albumin, and sugar, the greater the rallying power of the patient, and the clearer the mind, the better the prognosis. (*b*) Less urgent cases. Here the operation is prospective and preventive. The patient is younger, the power of voluntary mic-

turition is still good, there is no cystitis, but palliative treatment fails to relieve the frequent disturbance at night, and hematuria has begun to occur at intervals. Here the surgeon is abundantly justified in advising the operation as a preventive of worse things which are certain to come. The operation will not be often accepted here, but it is in such cases that it will give the best results.

"As to the amount of relief which we can promise our patients, we shall do well to be cautious while hopeful, deciding each case by itself very carefully, especially as regards these two factors, (*a*) the amount of voluntary micturition and control which this operation will restore must largely depend upon the condition of the bladder, how far long-standing cystitis or habitual use of the catheter have damaged its walls, replacing the muscular with fibrous tissue, and converting it into an inelastic thick-walled sac. (*b*) The state of the prostate. The more vascular, the softer, the more rich in glandular tissue this is, the more decided will be the shrinking that follows castration. On the other hand, the denser and more fibrous the gland, the longer delayed certainly, and, perhaps, the less marked will be the benefit."

Finally as to the theory of the operation. I have suggested that the function of the testis, like that of the ovary, is twofold,—the reproduction of the species, the development and preservation of the secondary sexual characteristics of the individual. The need for the exercise of the latter function ceases when full adult life is reached, but it is possible that the activity of the testis and ovary in this respect does not disappear coincidently, and that hypertrophies in closely-allied organs, like the prostate and uterus, are the results of this misdirected energy. This hypothesis would increase the analogy between the fibromyomata of the uterus and the adenofibromata of the prostate, which, from a clinical stand-point, is already very striking, and is further strengthened by the almost identical results of castration in the two conditions.

Whatever the explanation of the good results, I am glad to believe that the operation has now a permanent place among the procedures that bring relief to a very large class of sufferers, in many of whom no other form of operative interference could be employed. This is sufficient recompense for whatever time and thought I have expended upon the subject.

In conclusion, let me ask you to try to study your prostatic cases carefully and thoroughly so as to reach a sound basis for advice as to castration as well as to other treatment. Too often I find that a digital examination per rectum and an insertion of a vesical sound or catheter are the only measures employed to make the diagnosis and

to reach a conclusion. On the contrary, the average prostatic requires a careful study of some days at least before the essential facts can be determined. The total daily excretion of urine, the proportion of urea, the result of milk-diet or other special diet, the variations of temperature, the capacity of the bladder, the muscular power of its walls, the length of the urethra, the effect of recumbency, the general condition of the gastro-intestinal tract,—all these should be taken into account before reaching a decision. I can impress upon you or upon the profession no more valuable lesson in regard to prostatic hypertrophy than the need of this sort of patient study of the case—usually carried on to far greater advantage in a hospital—before arriving at a conclusion as to the treatment to be recommended.

AN APPLICATION OF THE THEORY OF THE MOVEMENT OF THE NEURON TO NORMAL AND PATHOLOGICAL MENTAL AND NERVOUS PROCESSES.[1]

By F. X. Dercum, M.D.,

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Subsequent to the reading of the interesting paper on the neuron by Dr. A. O. J. Kelly,[2] several members of the society requested me to give an explanation of the theory of the *movement* of the neuron, and more especially as held by myself. As I have pointed out in a previous paper, the theory that the neuron is not an absolutely fixed morphologic integer has been advanced independently by several writers. When the thought first occurred to me that nerve cells have the property of movement, I examined the literature to see whether a similar idea had occurred to others, and I found that it had already occurred independently to three writers, one in Germany and two in France. The first to advance such a view was Rabl-Rückard, who, in 1890, suggested that nerve-cells have an ameboid movement; and he, at the same time, pointed out the significance of such a view in enabling us to explain the phenomena of hysteria. His ideas attracted no attention, but in 1894, Lépine, in a paper on a case

[1] Read before the Philadelphia County Medical Society, February 24, 1896.

[2] University Medical Magazine, Vol. ix, No. 4, p. 276, January, 1897.

of hysteria of a peculiar form, advanced practically the same theory. His idea was that the neurons were capable of movement, and to such an extent as to enable them to alter the degree of their relation to each other. Some six months afterwards another French writer, Mathias Duval, advanced the same theory in a communication made to the Société de Biologie. Lépine had been unaware of the theory advanced by Rabl-Rückard and Mathias Duval, was equally ignorant of the views advanced by Lépine. A week after Duval had advanced his theory, Lépine, before the same society, repeated his former arguments in its support. I myself presented the theory of the movement of the neuron in a paper read before the College of Physicians in January, 1896, and in June of that year read an address on the same subject before the American Neurological Association. In the mean time, in the spring of 1896, the theory had been again advanced by two other French physicians, Azoulay and Pupin.

This theory has now begun to attract some attention and is gradually meeting with support. It has been opposed, however, by the distinguished Spanish histologist, Ramón y Cajal. I will not take time to consider the views of this investigator, as I have already done so in a previous paper. I will, however, pause sufficiently long to point out that his argument bears within itself its own refutation. He maintains that the nerve-cells do not move, but, on the other hand, that the neuroglia cells do move. He points out the fact that the processes of the neuroglia cells have numerous short arborescent and plumed collaterals, and he states that in these cells two different phases can be observed; first, a stage of contraction,—that is, a stage in which the cell processes become shortened; and, secondly, a stage in which the cell is relaxed,—that is, a stage in which the processes of the neuroglia cells are elongated. He maintains that the processes of the neuroglia cells represent an insulating and non-conducting material, and that during the stage of relaxation these processes penetrate between the arborizations of the nerve-cells and their protoplasmic processes and so make difficult or impossible the passage of nerve-currents; on the other hand, in the stage of contraction the processes of the neuroglia cells are retracted, and they no longer separate the processes of the nerve-cells, and the latter are thus permitted to come into contact. Evidently Ramón y Cajal admits the very thing against which he contends, for if the nerve-cell processes are at one time not in contact and at another are in contact, they must certainly move, and the question before us is self-admitted. It matters not whether the processes of the nerve-cells move little or move much, but that they move at all is the question at issue, and this Ramón y Cajal admits though he makes the movement a purely

passive one. It is certainly a minor point whether the movement of the processes of the nerve-cell is active or passive; although it is in the highest degree improbable, and is certainly not evident from the histologic facts at our disposal, that the neuroglia corpuscles play the *rôle* of an insulating material. While the movements of nerve-cells have not been observed in vertebrate animals, such an observation has been made in an invertebrate form. A German investigator, Wiedersheim, in 1890, saw in the living animal, leptodora hyalina, an entomostracan, the nerve-cells in the esophageal ganglion move. This ganglion may, in a sense, be regarded as the brain of the animal, inasmuch as it receives the fibres of the optic nerve, and Wiedersheim actually saw these cells move and change their shape, and this movement he describes as slow and flowing. (He presents a number of drawings of the esophageal ganglion made at different times, showing the various shapes assumed by the nerve-cells.) This observation evidently possesses a profound significance. It does not matter that it was made in a form far removed from the vertebrates, for we should remember that it is just in the lower forms that general biologic truths have been demonstrated. I will not occupy your time with a further consideration of the facts on which this theory rests, but will proceed at once to its application to normal and pathological mental and nervous processes.

Before beginning a systematic consideration of the theory it may be well to give as an illustration of its simplest expression the supposed behavior of the neurons in a case of transient hysterical paralysis. An hysterical paralysis, as we all know, may be so complete as to simulate very closely a paralysis due to gross lesion, and yet in the course of a few hours or, perhaps, in a few minutes such a paralysis may absolutely disappear. Modern students of hysteria are convinced that hysteria is a *bona fide* affection with a syndrome which is as characteristic as any of the diseases with which we are acquainted. The idea of voluntary simulation has no hold on the minds of the neurologists of to-day. What is it that happens in the nervous system when a limb, say an arm, is suddenly paralyzed, remains paralyzed for a time, and again suddenly recovers its function? Evidently some change has taken place in the nervous system. Let us see how the theory of the mobility of the neuron enables us to explain the phenomena. The neurons of the motor area of the cortex not only present, as you are aware, protoplasmic extensions directed towards the surface of the cortex, the dendrites, but also a protoplasmic extension downward which becomes a nerve-fibre, but which is, properly speaking, a process of the cell body, no matter what its length may be. This process, which is now known as an axon, extends down-

ward through the white matter of the brain, the internal capsule, the crus, the pons, the medulla and the cord, and terminates in the cord in a brush-like extremity, the end-tuft. By means of this end tuft the cortical cell is brought into relation with the motor nerve-cells in the spinal cord. What the relation between this end-tuft and the nerve-cell in the anterior horn of the spinal cord may be is not known. It is probably one of contact or close proximity. That an actual continuity of structure between the end-tuft and the spinal cell does not obtain is now absolutely known.

Now what happens in the case of hysteria in which the arm has been paralyzed? Due, we will say, to an emotional or other psychic shock, or possibly to a physical shock, the neurons of the arm centre of the cortex retract their processes, and in such a way that their end-tufts in the spinal cord no longer bear their normal relation to the spinal neurons. In other words, the connection between the cells is broken. We will suppose now, as every one of us has seen, that, as a result of suggestion either with or without hypnotism, or spontaneously, the paralysis of the arm disappears. According to the view here advanced this disappearance is due to the extension or protraction of the processes previously retracted,—that is, the end-tufts resume their normal relations with the spinal neurons and function is re-established. Certainly no other theory explains so readily the appearance and disappearance of hysterical paralysis or of hysterical anesthesia. In these conditions there is really a lesion, the lesion consisting of a break in the normal relations of the neurons due to retraction of cell processes.

As regards the movement of the cell processes, it is highly probable that this property is not limited to the end-tufts of the axons, but is also shared by other processes of the nerve-cell, especially the collaterals, and, perhaps, even to some extent by the dendrites. A further possibility suggests itself, and that is that the movement may not be one of simple retraction and protraction, but may also be lateral in direction.

Having now acquired a clear conception of what is meant by the movement of nerve-cells, let us proceed to apply the theory in a systematic manner, and let us see how readily it enables us to explain various normal and pathological phenomena. Let us take, to begin with, the familiar instance of sleep. Sleep has been commonly attributed by physiologists to an anemia of the brain, notwithstanding the fact that true and undoubted anemia of the brain, such as follows great loss of blood or accompanies marked general anemia, does not present the symptom of somnolence but rather that of insomnia. Let us see how the movements of the neurons will account for sleep.

Evidently the neurons when functionally active must be in relation with each other. Their processes must be either in contact or nearly so. Evidently this condition is a prerequisite of consciousness. Now what happens when the nerve-cells are exhausted by fatigue, when their volume and their cell contents have been diminished, as we have every reason to infer is the case, from the experiments of Hodge? Evidently their processes become retracted and they are no longer in relation with each other. The neuron isolated from the rest by retraction must be without function. General retraction of neurons must mean absence of function, must mean unconsciousness, must mean sleep. In other words, in sleep the neurons have their processes retracted; in consciousness their processes are extended.

See, also, how beautifully this theory enables us to explain pathological unconsciousness, such, for instance, as occurs in cerebral concussion. A man while conscious receives a severe blow upon the head, the neurons suddenly retract their processes, and unconsciousness results. Certainly no other theory for the explanation of the unconsciousness of cerebral concussion is equally simple or equally plausible. It is extremely probable also that other forms of unconsciousness are to be similarly explained, for instance, the unconsciousness of chloroform or ether anesthesia or the sleep produced by drugs. In these conditions it would appear that the neurons, by virtue of the direct action of the substances introduced into the circulation, retract their processes and for the time being sever their relations with each other.

Let us now turn our attention briefly to elementary normal psychic processes; let us take up, for instance, the physiology of perception. What are the changes that take place in the neurons when a thing is felt or seen? Let us take a simple illustration, such as I have used in a previous paper. Let us assume that a sequence of sound vibrations impinging upon the peripheral auditory neurons —that is, the nerve-cells of the spiral ganglion of the cochlea—produce in them a change which affects the relations which their neuraxons—that is, their centripetal processes—bear to the nerve-cells of the auditory nuclei of the medulla, and secondarily to the neurons in the auditory area of the cortex. It is probable that the effect produced upon the latter is such as to cause them to retract, extend, or otherwise move their processes, and thus bring about a change in the relations which the various neurons of the auditory area of the cortex bear to each other. It is evident, further, that the same sequence of sound vibrations must always produce the same changes in the cortical neurons. In other words, given sounds are represented by certain combinations of the neurons with each other, and these com-

binations persist only as long as the vibrations impinge upon the auditory apparatus. An act of perception, therefore, consists of changes in the relations of the cortical neurons to each other, these changes corresponding to and depending upon certain physical impacts upon the sensory organs. As a corollary the combinations among the neurons so formed bear definite and fixed relations to the external world.

Now what is the physiology of a conception? Evidently it consists in the reforming among the neurons of an old combination,—that is, a combination the same as or similar to one which was originally produced by a physical impression upon the organs of sense, but which is now produced by some other agency. Thus, a given note produces a certain combination among the neurons in the auditory area, and the forming of this combination is an essential part of the act of perception. Now, to my mind, the act of conception consists in the formation among the auditory neurons of the same combination without the actual impinging of the sound vibrations upon the ear. The explanation of the reproduction of old combinations in the cortex without external sensory stimuli I will for a moment defer and pass to the consideration of memory.

Various theories have been advanced to explain the phenomena of memory, but I will not take the time to consider them, but simply show how readily the theory of the mobility of the neuron explains this remarkable property of mind. Let us recur for a moment to the illustration just used. We will say that a sequence of sound vibrations has impinged upon the peripheral auditory neurons and in turn caused the neurons of the auditory cortex to move their processes. Now, other things equal, the degree of the excitation depends upon the intensity of the physical impact upon the auditory apparatus. Evidently the number of cortical neurons aroused into action must vary greatly, and it is probable that the movement does not cease in the auditory area of the cortex, but is diffused to neighboring areas and even to those which are relatively distant. Now we will suppose that a sequence of sound vibrations has caused the auditory neurons to assume new relations to each other. These new relations will depend largely upon the fact as to whether a similar sequence of impressions has passed through them before. If so, the old combinations will be reformed, and as a corollary there follows the recognition by the ego of the sounds as something heard before. Here we have an elementary illustration of the act of memory. According to this view memory does not depend upon fixed cerebral structure, but upon the combinations of the neurons formed from time to time, being the same as or similar to those which have been formed before.

Let me illustrate a little further: The excitation which has been produced in the auditory area of the cortex gradually diffuses in various directions,—that is, there passes from the auditory centre of the cortex through the general cortex of the brain a series of combinations among the neurons along the oldest and best travelled lines. At first a given sequence of musical sounds suggests merely a familiar air, but a moment later, when the movement has diffused as far as the visual areas of the cortex, old combinations are reformed which now give rise to visual memories, and instead of merely the memory of a familiar air, we have in addition a visual memory of an instrument or person with whom the air is associated, or perhaps of an operatic performance. I might enlarge upon this theory of memory, but time would hardly permit. Let us bear clearly in mind, however, that memory is not due to any constant condition of structure, but merely to the forming anew of old combinations among the neurons.

Other psychic phenomena also find a ready explanation on the theory here advanced. We can readily understand, for instance, how sequence of thought is explained by the movements of the neurons; if the neurons are constantly changing, if from the hour of awakening they are constantly responding to stimuli from without by changes in their relation to each other, it follows that the sequence of thought itself depends upon the sequence of these changes. Here, also, lies the explanation of the continuity of thought. The direction of thought and the association of ideas must depend largely upon the frequency and the consequent readiness with which special combinations among the neurons have been and are formed. Another idea also suggested in this connection is that not all of the neurons are active at the same time, but that the number varies greatly. However, I will not pause to further consider this aspect of the subject.

I will now call your attention briefly to the application of this theory to various pathological conditions. Let us take up some of the simplest phenomena observed in insanity. What is hallucination? An hallucination I would define as a spontaneous formation of an old combination among the neurons representing a former perception or conception, the combination being formed as the result of pathological conditions, and not in response to normal stimuli either from without, such as physical impacts upon the sensory organs, or in response to normal stimuli from within, such as preceding and connected trains of thought or other normal psychic processes. The combination representing an hallucination reacts in such a manner upon the general neurons of the cortex as to give rise to the belief in the reality of the sound, vision, or other special sense manifestation.

What is an illusion? An illusion is such a faulty combination of the neurons among each other as to lead to an imperfect recognition by the ego of the object perceived. Take, for instance, a case in which a cord or rope is mistaken for a snake. Here we have physical impacts normally received by the sensory apparatus, but owing to a diseased condition of the neurons these impacts lead to incomplete and erroneous combinations. We have already learned from the investigations of Berkeley, Andriezen, and others that the neurons as a result of various toxines, such, for instance, as alcohol, may become diseased, especially their processes. There would seem therefore to be every justification for regarding illusions as dependent upon faulty combinations among the neurons.

What is the pathology of a delusion? Here again it is probable that the explanation is to be sought for in disease of the structure of the neuron, and especially of its processes. It is characteristic of a delusion that the patient is incapable of accepting evidence in relation to his false belief even when that evidence is properly presented. It would seem that in the case of a delusion it is impossible for the neurons to form such combinations with each other as will bring the patient into proper relation with the outer world. A simple illustration will make my meaning clear. The man who believes, for instance, that he has no mouth in spite of the most direct physical evidence to the contrary, presents an instance in which a lesion has taken place among the neurons which renders them incapable of forming normal combinations in response to physical impacts upon the sensory organs. Again, it may be that a correct combination representing a perception or conception is formed, but in such case the neurons of adjoining areas are defective in that they cannot bring this combination into normal relation with the general neurons of the cortex.

How can we explain such a symptom as delirium or the mental condition seen in confusional insanity? Evidently owing to disease of the neurons, the disease being transient and due to toxic products in the case of delirium or possibly structural in the case of confusional insanity, the neurons are acting irregularly and wildly, making constantly the most erroneous combinations with each other. Fully formed and partially or erroneously formed combinations rapidly succeed each other,—probably also without relation to previously established lines of diffusion. It is easy also to explain the expansive mental state of mania and the depressive state of melancholia by merely supposing in mania that, due to pathological causes (generally toxic disturbances of nutrition), the neurons are acting with excessive rapidity, and that a greater number of them are active than under normal conditions, and in melancholia that the movements

are restricted and slower and that a smaller number of neurons are active.

I had intended also to show the application of this theory to such pathological conditions of the nervous system as are seen in hysteria and hypnotism. I have already instanced its application to one phase of hysteria,—namely, hysterical paralysis. Let it suffice to say that all of the symptoms presented by hysteria, even the convulsion, can be explained by it. I will not, however, more than allude to this portion of the subject. To hypnotism, however, I will give a few words, inasmuch as the theory of the mobility of the neuron is the only one that affords a rational explanation. Let us recall to our minds for a moment the condition of the neurons during sleep; their processes are retracted. Hypnotism is partial sleep,—that is, a condition in which only a portion of the neurons have their processes retracted. Let me illustrate my meaning a little more in detail. Let us take a case in which hypnosis is induced by the ordinary method of staring fixedly at an object and in which at the same time the suggestion of sleep is made verbally by the operator. Now, by reason of the effort of the attention expended through both the visual and auditory channels, the neurons of the corresponding regions in the cortex are thrown into certain relations with each other,—relations which correspond first to the action of the ocular apparatus, and, secondly, to the words of the operator received through the auditory channels. Very soon, by reason of the visual fatigue and under the auditory suggestion of sleep, the neurons of the visual area retract their processes and the partial sleep of hypnosis begins. Gradually the sleep grows deeper,—that is, by reason of the same influence, the other neurons of the cortex gradually retract their processes, with the single exception of those by means of which the verbal suggestion of sleep has been received,—namely, the auditory channels. In other words, the consciousness of the individual has been restricted to the narrow field of auditory perceptions. While in this condition somnambulism is readily induced, as follows: In response to words from the experimenter, certain movements are induced among the neurons in the auditory cortex, and these movements, being gradually communicated to the neurons of other areas of the cortex,—for instance, the motor area,—may lead the individual to perform certain automatic acts or manifest signs of cerebral activity referable to other portions of the cortex. I might still further elaborate this most interesting subject, but I must content myself by merely indicating the method by means of which hypnotism is to be explained. To my mind the theory here advanced is the only one that satisfies the facts.

I have endeavored to present in this paper my own views as to

the application of the theory of the movement of the neuron, and in as condensed a manner as possible. Any one of the special applications I have indicated could be enormously expanded. My desire, however, was to present this evening an outline merely of the subject, and I think that all will agree with me that the theory of the movement of the neuron is not only plausible but captivating in the extreme, as it makes clear and comprehensible much that otherwise cannot be understood at all.

HOSPITAL ORGANIZATION AND MANAGEMENT.[1]

By Henry M. Hurd, M.D.,

Superintendent of the Johns Hopkins Hospital, Baltimore.

Before beginning the consideration of the special topic assigned me, the organization and management of hospitals, I cannot resist the temptation to say a word respecting the improvements which have been made in hospital construction during the past thirty years. These improvements I believe to be largely due to the experience of the Crimean War in Europe and of the Civil War in America. The first gave us training schools for nurses and trained nurses, and the latter improved hospital construction. These waves of progress from the east and west crossed the ocean in turn and brought to the whole world better facilities for the care of the sick and better methods of treatment. I have no desire to "assess the benefits," or to indicate to which belongs the greater credit of the movement which has proved so beneficent. Each has been mutually helped by the other, and both have blessed humanity. The most noteworthy improvement in hospital construction has been in the direction of better sites for buildings, which are no longer crowded into narrow, dingy streets with unpleasant surroundings, and amidst insalubrious and unsanitary conditions, but are placed in open squares, in commanding situations, where sunlight and fresh air can freely come upon their joyous and health-giving missions. To one who has had the pleasure of looking down upon the city of New York from the commanding site now occupied by the new St. Luke's Hospital, it is unnecessary to make further mention of the great boon to the sick, which must inevitably come from these better locations. The buildings themselves are more scattered, and sickness and suffering are diluted by differ-

[1] Address before the Training School for Nurses at the Hospital of the University of Pennsylvania, February 17, 1897.

entiation and segregation rather than concentrated by piling one ward upon another. Hospital wards also have been more conveniently arranged to do their appointed work and have had comforts and conveniences in the way of service-rooms, tea-kitchens, rooms for the dangerously ill and dying, and the like, which have contributed immeasurably to the comfort of the sick. Special efforts have also been made in the construction of wards to provide for heating, ventilation, the isolation of infectious, harmful, or offensive patients, and for all sanitary needs. Laboratories for the investigation of disease have also been built and fitted with instruments of precision for the more accurate and scientific study of diseased processes. Operating-rooms have been planned and erected at lavish expense to carry out as strictly as in a laboratory all the requirements of antiseptic surgery. Disinfecting plants have been joined to every hospital to destroy the germs of disease and to prevent the transmission of infection from one patient to another.

The effect of these and of many other improvements which will readily occur without further mention has been to produce an institution of enormous complexity with diverse and seemingly conflicting interests and exacting requirements. To co-ordinate and combine all of these elements into a harmonious whole, interdependent in every part and yet independent enough to secure the greatest efficiency of the individual element, are problems which tax the energies of hospital officers. This is especially true of the hospital which assists to carry on medical teaching and the training of nurses, and in addition to the care of the sick endeavors to co-operate in the acquisition and diffusion of medical knowledge. It is related that a surgeon-general of the United States army, now deceased, once stated that it was no part of the work of the Army Medical Corps to study disease or to engage in any work of research, but rather to cure sick soldiers, forgetting that the cure of sick soldiers is more promoted by the spirit which leads to the study of disease than by the narrow view that the individual soldier at morning sick-call alone should engross the attention of the army surgeon. The best method of keeping the torch of knowledge lighted is to pass it along from hand to hand. Hence I have little sympathy with those who deplore the use of hospital wards as means of instruction. They should be used for the training of nurses and for the instruction of medical students, and by their very use for these purposes their efficiency for the cure of disease will be augmented.

One can hardly appreciate the magnitude of hospital work who does not reflect upon the different kinds of hospitals which now exist in the United States. Every city of any size has one or more, often

many, large general hospitals for the care of acute diseases, supplemented by establishments connected with almshouses for the cure of chronic diseases. Of the former my mailing list contains the names of more than 200; the number of the latter is legion. Every State has also large hospitals for the care of the acute or chronic insane; of the former there are about 130 in the United States, accommodating, respectively, from 50 to 2500 patients. Then come a large number of special hospitals, such as for diseases of women and children, for eye and ear cases, for throat diseases, and for the numerous brood of specialties. The aggregate number treated at public expense in general hospitals alone, according to the census of 1890, was nearly 28,000 persons. If to this be added the number treated in special or private hospitals, we get a faint idea of the numbers who are disabled and dependent through sickness and require treatment outside of their own homes. Add to the cost of support of these institutions the sums of money which are lost to the community by the loss of earnings of the laboring classes, by reason of sickness, and a faint conception can be obtained of the magnitude of the interests which are involved in a proper organization and management of hospitals. In a conversation with a specialist a few days ago, I learned that through a modification of an important operation he hoped to be able to shorten the term of hospital treatment for a certain class of patients by at least two weeks. If by similar improvements in hospital care and surgical operative technique a saving of fourteen days of hospital residence and of loss of the productive activity of the individual could be effected with even no more than 50 per cent. of our patients, what a saving would result to the entire community!

Organization and Management.

In Kipling's wonderful "McAndrew's Hymn," the lines which the engines constantly repeat serve as an excellent motto for hospital organization:

> "Now a' together hear them lift their lesson—theirs and mine,
> Law, Order, Duty an' Restraint, Obedience, Discipline."

In a well ordered hospital, as in a well-ordered State, there should be an ultimate and final authority, a proper subdivision of duty, and a thorough adjustment of all portions of a complex and often cumbrous mechanism to its special uses. It is the part of a board of trustees to establish the policy of the hospital, to give an impetus to the machinery, to oil and readjust it from time to time, to watch its operations, and to scrutinize its results.

The trustees should ordain rules and regulations, should estab-

lish proper checks upon all expenditures, and a rigid accountability for the use of the funds of the hospital, and, above all, they should see that the primary object for which the hospital has been established is carefully carried out. They should make a careful and judicious selection of executive and other officers, and should then see that they do their duty. Many trustees do more than this and concern themselves in executive details. This course in my judgment is unwise unless one of the trustees, as sometimes obtains in England, becomes a resident executive officer. Any attempt, however, to regulate executive details from the outside by visits daily, weekly, or monthly eventually becomes a form. If it is not practicable to have a resident trustee, a chief executive officer clothed with the authority of the board of trustees should be selected and held responsible for the proper management of all departments of the hospital.

A friend of mine used to say that responsibility without power is weakness. Responsibility and authority must go hand in hand.

I have always been in favor of a similar individual and departmental independence. Every department should have a responsible head, who should control the affairs of the department subject to rules laid down by the trustees and be responsible for the results attained. If I were asked to indicate the best machinery for hospital government, I should say a board of trustees to be sovereign and responsible for the whole institution, a medical board to advise the trustees in all medical matters, a chief executive officer to be known as director, secretary, or superintendent, whose duty it should be to co-ordinate and supervise all other departments, a purveyor to look after food-supplies, a matron to supervise the household, and a superintendent of nurses to have charge of the training-school and the nurses. Under these heads of departments there should be subordinate chiefs of departments like the engineer, chief cook, laundryman, diet-school teacher, store-keeper, and the like.

It may possibly be of interest if I give a concrete example of hospital organization by an account of the organization of the Johns Hopkins Hospital. At this hospital, in the language of the by-laws, the officers consist of the superintendent, the medical staff, the superintendent of nurses and principal of the training school, the purveyor, matron, and comptroller of accounts. The superintendent is the authorized means of communication between the board of trustees and the various officers and departments of the hospital. He also supervises all expenditures, examines all bills, and authorizes their payment. The medical board, representing the medical staff, advises the board of trustees in all matters of a professional character, and recommends the appointment of all medical officers. The superin-

tendent of nurses has the oversight of all nurses, probationers, and orderlies. She selects, accepts, and instructs pupil nurses, and is made responsible for the whole nursing work of the hospital. The purveyor is charged with the purchase, delivery, cooking, distribution, and serving of food, and has oversight over all who are employed in the kitchen. The matron has charge of the housekeeping and the laundry and the responsibility of the selection and purchase of bedding, clothing, household, and laundry supplies. Also the supervision of all domestics, ward-maids, and laundry employés. The comptroller of accounts supervises the receipt of money and the payment of bills for supplies, salaries, etc. The under officers, like the apothecary, clerk, supervisor, and engineer, are in charge of their respective departments under the supervision of the superintendent.

The theory of the organization is departmental independence co-ordinated through the superintendent. By this independence it is possible for every head of a department to carry out his or her own special ideas as to the best management of the department, and thus to attain an excellence which would be impossible should one person attempt to decide executive details. The board of trustees is interested in results more than in methods. Departmental responsibility is essential to the proper development and training of the head of the department and the consequent development of all branches of hospital work.

A word as to discipline. From the character of the work of a hospital and the necessity of the development of kindly instincts and humane methods of thought and action among all employés, it is unwise to establish and enforce a semi-military discipline or even one which would be practicable or advisable in a railway, a large factory, a corporation, or other business enterprise. There should be a rigid discipline and a strict accountability for the performance or neglect of duty, but this discipline should be sustaining in its nature and calculated to develop the individual. Through its kindly control the thoughtless or untrained nurse or employé should be led to a higher level of conduct and feeling until her better nature becomes the governing power. To many hospital employés the life becomes truly educational, and the officer who does not strive to make it so fails of an important duty. A wisely-directed enthusiasm, a kindling of the moral nature, a glimpse of a higher, broader, and more satisfying life can thus be given to all who have to do with the sick in hospitals. Hospital work, when done with loving, eager enthusiasm, blesses the patient and the nurse alike. It should be the aim of all to do charitable work in a charitable, kindly way. I have little

patience with those who look upon the medical treatment of the sick in hospitals as a business matter only, and the nursing of the sick as an avocation, a trade, a preparation for getting a living, a matter of hours on duty to be endured as patiently as possible for the relief which is afforded by getting through with them. Unless the care of the sick can be glorified by sympathy, kindly feeling, enthusiasm, and personal interest it becomes drudgery and heartless routine. Hence the necessity of developing the best instincts of all who have to do with the sick by a sustaining, fostering, and kind discipline which regards the individual and not the mass.

Much of the alleged lack of sympathy sometimes complained of on the part of hospital physicians, nurses, and employés, I believe to be due to overwork. The officer or nurse is often compelled to work until exhausted during long hours, and too often because the staff of physicians and nurses is utterly inadequate to do the work required. I know very few hospitals in the country where the medical staff is large enough to do the medical work easily and efficiently and in the best manner possible. The same is true of the nursing staff. In too many hospitals it is notoriously inadequate, and nurses are liable to be overworked by long hours of service and excessive labor during every moment of those hours. The difficulties of physicians and nurses are also often cruelly increased by overcrowded hospital wards. Ward beds and supplies are generally arranged for a definite number of patients, and except in sudden emergencies no nurses are usually provided beyond this proper and legitimate number. Every patient in excess brings disorder and confusion. The remedies are increased medical, surgical, and nursing staffs until they are adequate to perform their duties without undue strain and without excessive hours of duty. The overcrowding of hospitals except in a sudden and overwhelming necessity should not occur. It is a mistaken act of kindness to crowd an additional patient into an overcrowded hospital.

Should the superintendent of the hospital be a physician or layman, a man or woman, a trained nurse or a matron? These are questions which usually give more anxiety in theory than in practice. The customs of the country differ materially in different localities and for that matter in different hospitals. In hospitals for the insane almost universally the chief executive officer is a physician; and wherever this custom has been departed from it has generally been at the expense of a divided authority and a loss of efficiency. In the United States thus far with the exception of hospitals for the insane there exist no training schools, so to speak, for hospital superintendents, and hence they come to their duties generally from other walks in life. Frequently they have been clergymen of middle age

whose throats are out of repair, retired physicians whose sands of life have nearly run out and whose usefulness may have already departed, accountants, teachers, philanthropists, and the like, who have usually assumed their duties without much previous experience. The result of this lack of persons with a definite training has been that when a new hospital is ready to be opened, trustees and managers are often in despair to find superintendents. I know of two fine hospitals to-day whose trustees are engaged in a still hunt for well-trained, experienced superintendents, with little hope of finding men ready-trained for their service. In Boston the superintendent of a hospital is usually a physician; in New York is usually a layman; several excellent hospitals in Boston, New York, and Philadelphia are presided over most efficiently by women. I do not think, as I intimated above, that theoretical considerations or hard-and-fast *a priori* rules should have much to do with the appointment of a hospital superintendent. Wherever the right person is found, whether physician or layman, man or woman, let this person hold the place. As a rule, I think that a hospital engaged in medical teaching should be under the charge of a physician, to prevent misunderstanding and misconceptions between the medical teaching staff and the board of trustees. I know of one very efficiently managed hospital, however, where this does not seem to be essential.

I would protest, however, against the feeling that any person who has failed in business or has become superannuated for any reason becomes thereby fitted to be a hospital superintendent. The growth in hospital work throughout the United States and the increasing complexity of hospital organization will soon demand that some means be found to train hospital superintendents for their duties by previous appointments as assistant superintendents. In small hospitals or special hospitals the duties of superintendent and matron can in many instances be combined with those of the superintendent of nurses, but in such cases a housekeeper should be provided on one side for the immediate supervision of the laundry, household, and kitchen, and, on the other, an accountant to keep the accounts and to make purchases. Where a superintendent of nurses is found who is willing to add the duties of superintendent of the hospital to her other duties, she is generally sadly overworked. Hence no nurse should ever consent to assume such duties without a certainty of ample assistance upon the non-professional sides of her work.

Training School for Nurses.

In every hospital the question of the proper organization of the training school assumes great importance. The time has passed

when it can be seriously considered by any one whether or not the training school should exist. For the benefit of the hospital and the proper and efficient conduct of the work it may be assumed without any necessity for demonstration that a training school is a necessity. No stronger evidence can be given of this fact than the movement which has sprung up within the past three years to supplement the hospital work of the religious orders by training-school instruction. Even the Catholic sisterhoods, whose members work from a sense of religious duty and a desire to accomplish charitable work, have, in many instances, employed superintendents of training schools to instruct members of the sisterhood in their duties and to train them for better nursing. I say that there can be no question as to the organization of training schools in connection with general hospitals. As to the advisability of establishing training schools in connection with small special hospitals, I believe there is room for much honest difference of opinion. As far as hospitals themselves are concerned it is undoubtedly advantageous to establish such schools even in the smallest and most specialized hospitals. As far, however, as the pupil nurse is concerned it seems unfair to take her time and employ her energies for two or three years to learn nursing, not as a whole, but as a specialty. The time must come when all training schools in small special hospitals will have their work supplemented by experience in a general hospital and in every department of nursing. Institutions and hospitals for the insane stand on rather a different footing. The work of nursing the nervous and the insane is a special work, which, in the majority of instances, needs to be undertaken by persons possessing special fitness for it and a peculiar adaptation to its trying requirements. I am of the opinion, however, that hospitals for the insane also should arrange to give their nurses special instruction in the nursing of acute diseases like typhoid fever and pneumonia, instruction in operative work, in the care of surgical patients and accident cases, and training in obstetric work. This broader training cannot be secured in connection with hospitals for the insane, from lack of opportunity, and yet no nurse can be considered fully and adequately trained who is destitute of instruction in these important departments of nursing.

It is also important to consider the relation of the training school to the hospital itself. When training schools were first established, the movement was made in many instances without the active cooperation of hospital managers; in some instances, in fact, much against the judgment of hospital managers. Hence, it seemed important that these training schools should be officered, managed, and directed by those who were in sympathy with the movement. They

consequently were organized by separate societies and came into the hospital from the outside. In some instances this condition of things exists to-day: as, for example, in the training school connected with the Bellevue Hospital, which has its quarters away from the hospital and where trained nursing is given not to all, but to a portion of the wards. I am decidedly of the opinion, that whatever may have been the original propriety and necessity for separating the training school from the hospital management, that reason no longer exists, that it is preferable to have the training school considered a department of the hospital similar to every other department, and that the ultimate authority in the training school should be vested in the board of trustees of the hospital. In this manner the interests of the training school and of the hospital at large become identical. There is more sympathy between the training school and the other departments of hospital work and more co-ordination of effort.

The superintendent of the training school, as an officer of the hospital, should have the selection of her pupil nurses and should be made responsible for the nursing work. It is unfair to expect her to secure good results if she is not permitted to select the persons through whom the work of nursing is to be done. There ought, consequently, to be an absolute identity of interest between the training school and every other department of the hospital. Each ward in the hospital should have a trained head nurse to supervise the nursing of the ward, to assist the superintendent of nurses in the instruction of pupil nurses, and to constantly direct and control the work of the pupil nurses. There should be also nurses placed in special charge of operating-rooms, with a tenure of office as permanent as that of a head nurse in the ward. It is unwise to change the responsible operating-room nurse weekly or monthly, as is sometimes the custom in hospitals. A nurse coming fresh to the duties of the operating-room without special preparation, and retaining the position for a few weeks only, cannot inaugurate and enforce the rigid antiseptic technique which is so important for the success of surgical operations.

There ought to be in addition, in connection with every training school for nurses, facilities for instructing nurses in practical cooking for the sick. This should not be given by demonstrations in the presence of the nurse or by lectures alone, but the nurse should be required and expected to do practical work in the diet kitchen until she is familiar with the preparation of food for the sick. She should know the food values of different substances, and should be able, when she leaves the training school, to supervise the diet of an invalid, and, if necessary, to cook the food in a proper and appetizing manner.

A word in this connection as to hospital dietaries. There is at present no department of hospital service where so great improvement needs to be made as in connection with hospital dietaries. The food-supply in America is abundant and the amount furnished to hospitals is generally far in excess of what is required. There is, however, and with good reason, almost universal dissatisfaction with the dietaries which are furnished to all classes of patients. They are unscientific, wasteful, and ill-adapted to the requirements of sick persons. There should be on the part of some experienced hygienist or household chemist a careful consideration of articles of diet for the sick in hospitals, and the food values of many different dietaries should be considered and worked out. An effort should be made to put the giving of food upon a strictly scientific basis and to obviate the present monotony and the unappetizing system now prevalent. Until this is done dissatisfaction on the part of the patient and a failure on the part of the physician to secure proper results seem to be inevitable. Within the past two years in connection with two hospitals for the insane and one or two general hospitals an attempt has been made to do this. An expert chemist, Ellen H. Richards, of the Massachusetts Institute of Technology, has prepared dietaries for every department of hospital service and has supervised their practical operation. She has encountered many difficulties in this work and has achieved some results which, while encouraging, have not been all that she desired. She has demonstrated, however, that a much more varied, more nutritious, and better-arranged dietary can be furnished to all departments of a hospital—free wards, private wards, nurses' home, and officers' dining-room—at less cost than is now secured in most hospitals.

I mention this matter to express the hope that those of you who become superintendents of hospitals or superintendents of training schools will bear in mind the necessity of doing more in these directions for the comfort of patients, nurses, and medical officers. The cooking of special dishes for very sick patients, in my judgment, ought not to be done in the general kitchen.

It is evident that in the future an increased use must be made of hospitals for the care and treatment of the sick. The movement which has lately grown up in many of the cities for the care of patients of a well-to-do class points to an increased confidence in hospitals and a public demand for accommodation therein, not alone for the poor, but for the wealthier classes. This demand should be heeded by hospital managers. No city should have the reproach that provision only exists for the poor and thriftless sick. Facilities should be given in every hospital for the care of patients who are

able to pay moderately or even liberally for good nursing and expert medical care. Patients suffering from typhoid fever can be much better taken care of in general hospitals than even in luxurious homes. Patients who require surgical operations are also better provided for in hospitals than at home. Our new and better arranged operating-rooms render it desirable that many operations be done in hospitals which were formerly done at home. There ought also to be in connection with every hospital special wards for the treatment of cases of neurasthenia and of mild forms of mental derangement. These patients should not be compelled to go to hospitals for the insane, nor should they, when of moderate means, be compelled to pay the ruinous charges of the private hospitals for other care and treatment. Wards for isolating cases of infectious and contagious disease ought also to be provided for those patients who are able to pay moderate prices. It is a disgrace to many cities in the United States that no such hospitals exist. In my own city there is no place where persons of moderate means suffering from contagious disease can be admitted.

All these requirements for hospitals demand increased revenues. The hospital, like the modern university or technical school, requires every year increased endowments and increased expenditures to keep pace with the onward march of medical knowledge. Unless hospitals are properly managed and all undue expenditures are eliminated there is great danger that we shall be called upon to face in this country a problem which has already given much anxiety in England,—viz., incomes which are inadequate for the support of hospitals and a consequent inability to develop them along lines where growth and development are most needed.

Hospital Finances.

The question of hospital finances is a large one which necessarily gives much anxiety to those who are charged with the responsibility of the maintenance of a hospital. A few cardinal principles may be laid down which, if rigidly adhered to, will simplify this vexed and vexing question materially.

(1) The free work of any hospital should be strictly defined and governed by definite rules. If free patients are to be admitted from the city alone where the hospital is situated, this rule should be clearly stated and strictly enforced. Hospital managers should resist the allurements of an "interesting case" from Chicago or the blandishments of the physician in New York or Canada who has an old chronic case who is "willing to be made a clinic" of, or the entreaties of the woman who has walked from Omaha because of her faith in

the hospital, or of the hospital tramp who has been in thirty different hospitals and desires to enter the thirty-first. These are doubtless worthy people and are sometimes true objects of charity, but they cost the hospital an outlay not contemplated by its founders, and to care for them in violation of rule simply because it is asked for does harm rather than good. Many rural communities, I have good reason to think, do not establish cottage hospitals, as they are abundantly able to do and should do for the relief of their own sick, because of the freedom of admission to city hospitals, often for the asking. The movement towards the city, of which we hear so much nowadays, is a serious feature of hospital work and one calculated to throw undue burdens upon hospital workers in cities.

(2) Every patient who is able to pay for any portion of his care in a hospital should be asked and expected to do so. If he can pay nothing he should be as considerately treated as if he could pay liberally for everything which he receives. If he can pay one dollar per week, or any other sum which may be equitable, he should do so. If this were done in every case we should hear less of the drying up of the springs of benevolence towards hospitals.

(3) Provision should be made in every general hospital for the admission of private patients who, by paying liberally for their care, can assist in bearing the burdens of those less fortunately situated.

(4) No purchases should be made by any person connected with a hospital which are not duly authorized by some person of competent authority. The desire to "buy something" resides deeply in the hearts of all hospital officers and the average man yields to temptation very readily.

(5) Monthly statements of receipts and expenditures should be prepared as regularly as the month comes round, so that the exact financial condition of the hospital may be known to its officers. There should be no deferred bills.

(6) An effort should be made to secure a fixed dependable income by securing yearly subscriptions from interested persons or corporations. Sporadic efforts to raise funds by concerts, balls, suppers, and similar social gatherings have a very limited range of usefulness, and should be resorted to as infrequently as possible when a hospital is once established and fitted for its proper work.

A hospital which has a debt upon it for its construction should be shunned. It should be borne in mind that the present exacting requirements for hospital support are more than sufficient to keep the energies of a hospital officer fully occupied. It is madness to think of paying debts out of the current income of any general hospital engaged in charitable work. Income and outgo should show a

balance upon the right side. The garment should always be cut according to the cloth. No hospital has any right to go in debt.

Permit me, in conclusion, to speak briefly of certain changes in hospital methods which, in my judgment, will be calculated to increase the usefulness of the hospital and add to its efficiency.

As nothing is more serviceable than a healthy emulation, hospital records and statistics should be uniformly prepared, so that the results attained by different hospitals may be properly and accurately compared. The same uniformity should also be secured in hospital accounts by uniform systems of book-keeping. Some able hospital managers look forward to the possibility of an international uniformity of accounts. Mr. H. C. Burdett, of London, the editor of the *Hospital*, has published a valuable book to show how uniform ledger headings and classifications of expenditures could be made, so that the results attained in supporting patients in England may be compared with those in our own country. I fear this is hardly practicable, because the scope of hospitals in the two countries differs so widely. There can be, however, no impropriety in comparing the cost of the support of patients in various parts of the United States. I know in fact that much good has been done by comparing the statistics of similar hospitals in the same city. If a hospital organization could be formed which would prepare a scheme for uniform statistics throughout the United States and Canada, much valuable information could thus be secured.

In the same line, and one which is of especial interest to you as nurses, may be mentioned the desirability of uniform requirements for the admission of nurses to training schools. In other educational institutions of a high class a substantial uniformity of preparation is required and pupils below specified ages are not received. There should also be a uniformity in the studies pursued, the hours of duty, and the length of the course. I am glad to be able to report that hospitals and training schools are keenly alive to the necessity of uniform standards of education for nurses. I know of no step which means so much to these organizations.

THE CONSERVATIVE TREATMENT OF MASTOID SUPPURATION.

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A large part of recent otological literature may be said to be taken up by articles upon the operative treatment of mastoid disease, but only a few have lately appeared upon any other method of management. Even these rare brochures have been more of the nature of apologies for the conservative measures used than definite contributions to therapeutics, and it seems safe to argue that a great majority of modern otological teachers believe that radical operations are the only treatment of this disease. While fully admitting the brilliant results of mastoid section and the extensive cranial and cervical dissections which are necessary in some rare cases, the writer is firmly convinced of the truth of the following propositions: (1) Most cases of severe acute, or intense chronic, purulent otitis are accompanied by suppurative conditions of the lining membrane of the mastoid cells. (2) Many cases of actual ostitis of the outer mastoid table with extensive purulent disease of the cells tend to get perfectly well of their own accord if the middle-ear conditions be promptly cured. (3) At least 50 per cent. of the cases of caries of the external mastoid table with granulation-tissue formation in the cells and marked constitutional involvement will recover without more extensive procedures than simple perforation of the mastoid plate. The remaining class of extensive caries and pus infiltration, which certainly does not include above 2 per cent. of the "mastoid cases" seen in this city, require special and radical measures, and are not under discussion in this sketch.

Two of my assistants[1] have lately reported cases in which the good results of non-operative measures were fairly shown; and four more typical cases, taken almost at random from over thirty seen since that time, are here reported. The symptoms of slight cases of mastoid suppuration are pain, tenderness, redness, and swelling behind the ear; the temperature, which may already be elevated by the otitis, rising from 2° to 4°. For this condition most writers advocate operation if antiseptic irrigation and cold to the mastoid are not followed by marked improvement in twenty-four or forty-eight hours.[2] The reason for this is not apparent, nor is it justified, in the

[1] Shimer, University Medical Magazine, August, 1894.

[2] Dench, Diseases of the Ear.

writer's opinion, by the subsequent history of such cases. Out of about sixty such early cases seen by the writer during the last five years, not one has been operated upon, and not one has failed to make a rapid and complete recovery. At the meeting of the Section of Otology and Laryngology of the American Medical Association, in Detroit, in 1893, some twenty-five or thirty such cases were mentioned by members in discussion, all of which had gone on to rapid cure under so-called simple means; the use of radical measures in such cases was also severely criticised.

The treatment of these cases, the writer believes, should be entirely unirritating in character. Inspection and palpation should be carried out no longer than is absolutely necessary to make a diagnosis. The mere presence of a speculum in the auditory canal increases the congestion and militates against the progress of the case, and prolonged handling, especially by heavy hands, is quite certain to extend the suppurative process.

All impediments to drainage must first be carefully removed; this should always be done by the syringe when possible, a warm (1 : 100) carbolized solution being employed, and all foreign material cleared from the canal and fundus. If perforation of the drum have not already occurred, and the membrane is distended by exudate, a free paracentesis should be made in the area of greatest bulging, after which the irrigation is carried on until all oozing of blood or pus has ceased. It is more usual, however, for spontaneous perforation to have occurred, and the drum will then nearly always be found to be more or less blocked up by shreds of desquamated skin and mucous membrane. These must be absolutely removed, as they form most efficient checks to drainage, the greatest care being taken not to cause unnecessary traumatism. Owing to their insolubility they can seldom be removed by the syringe, and are therefore best taken out by the aid of a very delicate forceps or L-shaped hook. Not infrequently all the mastoid symptoms appear to depend upon pus retention, due to the occlusion caused by these masses, and immediate improvement occurs after their removal. If a large perforation already exists, the tympanic syringe should be used, the curved tip being introduced through the opening in the drum, and the jet of fluid being directed backward and upward in the direction of the mastoid cells, which it is possible to so wash out in many cases. Small perforations giving imperfect drainage should always be enlarged with the knife, a portion of drum being bodily excised, if necessary. The aural fundus having been absolutely cleared as rapidly and gently as possible, it is lightly dried by absorbent cotton, and the meatus *loosely* plugged with antiseptic gauze. The naso-

pharynx now demands attention, and on the delicacy and care with which this is performed largely depends the outcome of the case. It is the rule to find an intense acute coryza of septic type, the mucous membrane being deeply engorged and a deep crimson in color. The nares are first to be cleared by a delicate antiseptic spray, the familiar Dobell's solution, when properly prepared, being admirable for the purpose. This having been accomplished, the mucous membrane is liberally coated with an atomized albolene solution of creosote (one grain to one ounce), menthol, and camphor, or some similar bland protective antiseptic. The pharynx should receive appropriate treatment; if simply engorged, thorough cleansing with an alkaline spray, such as sodium benzoate or potassium chlorate with carbolic acid or listerine, will be sufficient. Any sedative oil-spray may be subsequently used, but the use of pigments is not advisable, as their application is always more or less of an irritant. All irritating sprays, high pressures, or the use of any but the most sedative powders are most unfortunate in this disease, and should be carefully avoided. The use of Politzer's or catheter inflation in an early case of mastoid disease has always a very bad effect, and, indeed, this time-honored method of treatment is the *cause* of mastoid symptoms in not a few cases of otitis. Its use invariably either acts as a violent irritant, or actually extends the suppurative process by blowing septic material farther into the cells. As even if harmless it can serve no useful purpose in purulent otitis, its use had better be abandoned in all such cases.

The average duration of examples of simple mastoid disease is from a few days to about one month, the symptoms steadily abating and the perforation in the membrana tympani either closing or completely cicatrizing. The treatment above outlined may be applied at first twice daily, then once a day, and finally every second day, as seems indicated by the symptoms present. Towards the end of the case the middle ear may be very lightly dusted with acetanilide or boric-acid powder. If the mastoid symptoms have been a result of an acute attack occurring in the course of a chronic purulent otorrhea, obstructing granulations may require removal, which should always be done by the Blake snare in the most delicate but thorough manner. In these cases "counter-irritation" should be applied by painting the skin of the mastoid region with tincture of iodine, or, if the symptoms are marked, by blistering with cantharidal collodion. This is also frequently advisable and most beneficial even in the purely acute examples.

The second class of cases, in which actual ostitis has occurred, are usually characterized by an edematous swelling over the mastoid; in

advanced cases the tissues may be lifted by pus beneath the periosteum, so that an actual abscess may exist. The symptoms may not be more severe than in the first class of cases, but, as a rule, there is more pain and much more constitutional disturbance. Many, perhaps most, such cases may be completely cured by the treatment above outlined, provided it is skilfully and faithfully carried out. The antiseptic irrigation should include the use of at least a quart of fluid daily; and all obstructing cholesteatomatous masses, granulations, or sequestra must be removed from the auditory canal. Blistering the mastoid should at once be done unless an actual abscess already exists. Wet antiseptic dressings of carbolic or boric acid applied behind the ear are also often very effective, as shown by one of the cases appended. They should be frequently renewed and continued as long as evident active congestion persists. Those which have gone on to abscess formation call for simple incision down to the bone, with subsequent irrigation through the opening thus made. The duration of these cases is occasionally quite prolonged, four to six weeks being usually required to stop the otorrhea and heal the incision. But as at least twice this length of time is required after most radical operations for the same conditions, it cannot be said that time is lost by conservatism.

In class third, where slight caries and granulation-tissue formation have occurred, the symptoms are much more pronounced. There is usually a profuse and fetid otorrhea, the region behind the ear may show swelling, and the ordinary appearance of a chronic abscess, or the mastoid region may be purple, edematous, and pitting readily upon pressure. Occasionally the softened bone or the opening of a sinus may be felt from without. There is generally marked depression of the general health, with daily temperature rise and marked cachexia. In cases of this type there is nearly always considerable formation of granulation tissue in the aural fundus, on the proper removal of which depends much of the future progress of the case. Quite a percentage of even this type will recover without incision of the mastoid table, provided perfect drainage from the external auditory canal can be obtained, and the external soft parts are freely incised. It is generally safer and quicker, however, to perforate the outer mastoid table with the chisel. A recent writer (who advocates taking out the whole mastoid process for pus formation in a few of its cells) says that this operation "scarcely merits discussion at the present day." Perhaps not, but that it cures patients almost without risk or subsequent deformity has been proved by many careful operators; and that it suits a somewhat numerous class of cases better than other treatment, the present writer believes to be a fact. Per-

sistent irrigation through both the opening and the auditory canal should be continued, and the wound dressed with a dry acetanilide or carbolized-gauze dressing. Constitutional treatment, tonics, rest, and quiet are of course essential in these as in all cases of mastoid disease.

Intense mastoiditis with involvement of the whole process, the digastric fossa, or the meninges, is fortunately a very rare condition. When present it calls for extensive dissections and removal of all purulent foci, and comes more properly under the province of the general surgeon than that of the aurist. Its occurrence may almost never be apprehended if the patient is properly treated during the early stages of the disease.

The following examples fairly show the ordinary course of cases of mastoid suppuration under properly-selected conservative treatment, and illustrate the three types of the disease above discussed.

Case I.—M. L., boy, aged 12 years. Received a stab from a splinter of wood into the auditory canal a few days before presenting himself for treatment at my clinic in the Philadelphia Polyclinic. He complained of otorrhea, mastoid tenderness, and earache. There was a large anterior perforation in the drum, the latter being greatly congested. For some reason he left the clinic before proper treatment could be applied. Two days later he returned with all the symptoms intensified, the skin of the mastoid tense, red, and edematous, and the auricle standing outward; prolonged irrigation through the auditory canal with carbolized solution 1 : 100, sedative sprays to the naso-pharynx, and a blister of cantharidal collodion to the mastoid were used. The boy was better at next visit, continued to improve, and twenty days later was absolutely well, with the perforation in the drum completely closed.

Case II.—Mr. M., aged 18 years, seen in consultation by the kindness of Dr. M. J. Stern. Had epidemic influenza a short time before, with acute otitis as a sequel. Mastoid region very painful, purple, and edematous, pitting decidedly on pressure; auricle standing outward, temperature 100° F., patient very weak and depressed. The aural fundus was found to be completely blocked with epithelial masses, which were removed with great difficulty by the syringe and the writer's hook. Antiseptic irrigation twice daily, sedative naso-pharyngeal treatment, iodine to the mastoid, and absolute rest were ordered. Rapid improvement took place, and the young man was reported absolutely well in one month by Dr. Stern.

Case III.—Mary S., aged 8 years, reported at my clinic for treatment a few weeks ago. Has had otorrhea for three years, lately mastoid has been painful and swollen. A chronic abscess, the size of a

large walnut, was found to occupy the mastoid region; the auricle stood almost directly outward, and there was a large central perforation of the drum, with free purulent discharge. The abscess was freely incised by my assistant, Dr. Audenreid, about one and a half drachms of pus being evacuated; no perforation of the mastoid or carious spot could be demonstrated. The abscess cavity and auditory canal were freely irrigated with warm carbolized solution and an acetanilide dressing was applied. This treatment was repeated at first once daily, later but three times a week. Eighteen days subsequently the abscess was perfectly healed, the otorrhea well, and tympanic perforation nearly closed. I saw the child to-day (two weeks later), and she has remained perfectly well, the opening in the drum being barely demonstrable, and the scar of the incision scarcely observable.

Case IV.—May D., aged 7 years; had measles three weeks previously with otorrhea as a sequel. Mastoid region intensely painful and occupied by a fluctuating swelling throughout. I wished to make an immediate incision, but at the urgent request of the parents decided to first try other treatment. The auditory canal was thoroughly irrigated, the naso-pharynx treated with sedative sprays, and a dressing of wet carbolized gauze applied to the mastoid region. I then transferred the case to my assistant, Dr. W. H. Fritts, for treatment, and his full notes are appended.

"March 15, 1896, the child complains of headache, severe pain in and around the left ear, tinnitus, and marked impairment of hearing on left side; temperature 101° F.; pulse 92; is extremely restive, and the expression anxious.

"There is a large anterior perforation in the drum, from which a copious muco-purulent discharge oozes from the middle ear; distinct pulsation is present. The mucous membrane of the naso-pharynx is congested, thickened, and bathed with tenacious mucus. The parts behind the ear are red, swollen, and extremely sensitive to touch; the swelling extends down the neck, and the lymphatic glands are involved; the auricle stands out and away from the head, and there is marked tumefaction in the posterior wall of the osseous meatus. After thoroughly cleansing the ear with hot carbolic solution (1 : 200) the parts were carefully dried by the use of absorbent cotton tufts on an applicator, and the surface was *very lightly* dusted with boric-acid powder. A large pad of wet carbolized gauze was applied over the entire temporal region, which was covered with oiled silk and changed as often as was necessary to keep it moist. March 16, otorrhea still profuse, swelling behind the ear about the same, temperature 101½° F., pulse 96. March 18, the mastoid swelling is decidedly less marked,

and the patient's general condition is decidedly improved, temperature 99° F., pulse 92. Dusted the aural fundus lightly with finely powdered acetanilide. March 19, very little discharge from the ear, perforation reduced in size about one-fourth; treatment continued. March 20, only slight blush remaining over mastoid region, temperature normal, wet dressing discontinued, fundus again dusted with acetanilide. April 4 (twenty days from commencement of treatment), the child is well nourished, general condition very good, normal temperature and pulse; left drum shows *slightly depressed anterior cicatrix, hearing normal.*" Undoubtedly the outer mastoid table was spontaneously perforated in this case, and the fortunate result was due to drainage inward through the mastoid cells. While free incision of the soft parts would certainly have been a safer procedure, the case is especially interesting as showing what can often be done by less radical means.

In conclusion, the writer desires to say that he has tried the "modern" method of treating acute aural suppuration without lavage, by plugging the canal with gauze, and regards it as vastly inferior to the method above described. Syringing by a nurse, or by any one but a specially trained surgeon with expert and gentle hands, is *always* dangerous and generally hurtful, but when properly handled, the syringe is the most valuable instrument at our command in treating acute aural suppuration.

A CASE OF ARTHRITIS DEFORMANS.[1]

By John M. Swan, M.D.,

Assistant Demonstrator of Anatomy, University of Pennsylvania; Curator and Pathologist, Episcopal Hospital, Philadelphia, etc.

The subject from which these specimens were taken was a male, aged about 40 years. On the dissecting table at the University of Pennsylvania multiple osteomata were noticed along the ventral surface of the bodies of the vertebra. I imagined that the articular ends of the femora which entered into the formation of the knee-joints were increased in size. This led to a careful examination of all the bones of the skeleton. Unfortunately, no history of the case before its appearance in the dissecting room can be obtained. The pituitary fossa was quite normal.

Contrary to expectation, it was found that the lower extremities of the femora were not disproportionately enlarged. On disarticu-

[1] Read before the Philadelphia Pathological Society, October 22, 1896.

lating at the hip, the upper extremities of both femora were found to have undergone marked changes. The neck of the left femur (Fig. 1 and Fig. 2) has been reduced by a process of softening and absorption until the distance from the shaft of the bone to the head is only 1.5 centimetres. The summit of the great trochanter projects sixteen millimetres above the highest point on the head of the bone. All the facets for the attachment of muscles present lips of bony material which form distinct cavities. These hyperostoses are also noted along the upper portion of the linea aspera. The neck looks as though it had been forcibly twisted when hot and allowed to cool in the new position, and about the head of the bone are those overhanging masses of osseous substance which appear as though melted material had been poured over the bone and then allowed to cool. These formations are called by Warren[1] "molten" fringes. The fossa for the insertion of the ligamentum teres is so dislocated that it occupies a position on the lower and anterior portion of the head. This fossa is larger than normal and its margins are much roughened. The entire head of the bone is flattened and broadened, and the articular surface is eburnated.

The right femur (Fig. 3) presents the same characteristics as the left, but in much less degree. The upper limit of the great trochanter projects eleven millimetres above the upper point of the head. The facets for insertion of the muscles present the same bony lips as those noted on the other bone, and these hyperostoses also affect the upper portion of the linea aspera. The neck of the bone appears twisted and forms a smaller angle than normal with the neck. The molten fringes about the head are present, and the fossa for the ligamentum teres is dislocated. Both bones seem increased in size, and the lower articular extremities, while not presenting any marked signs of disease, appear to be clumsy.

Both innominate bones (Fig. 4 and Fig. 5) are large and present numerous exostoses corresponding to the positions of the origin and insertion of the various muscles. These formations are most numerous along the crests of the ilia, along the rami of the pubes and ischia, and on the tuberosities and the spines of the ischia. The acetabula, of course, present the most marked deformities, corresponding to the diseased heads of the femora. The left bone (*a*) presents a cavity which is seven centimetres wide by eight centimetres long. The rough area at the bottom of the cavity for the attachment of the ligamentum teres is entirely wanting, and its place is taken by a mass of osseous tissue, which looks as though it had been run in while it was hot and then allowed to solidify. The surface of this mass presents several facets which are separated by sharper or blunter ridges, and

FIG. 1.

Left femur, posterior surface.

FIG. 2.

FIG. 3.

Left femur,
anterior surface.

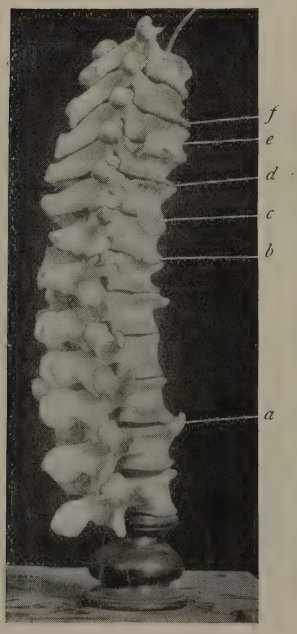
Right femur,
posterior surface.

FIG. 4. FIG. 5.

a *b*

Innominate bones.

FIG. 6.



Vertebral column seen from right side.

which seem to be formed by the different degrees of pressure exerted at various points. This bone is eburnated and highly polished. The cotyloid notch is narrower than normal, and the edges of the entire cavity are thickened and raised by the molten fringes. The right acetabulum (*b*) measures 6.5 by 7.5 centimetres. The articular surface is increased in extent and the cavity is more shallow than normal. The rough surface for the attachment of the ligamentum teres is not entirely obliterated and presents numerous ridges of new bone-formation. The surfaces for articulation with the sacrum are larger than normal and present several nodular excrescences. The articular surfaces forming the symphysis pubis are increased in size, being broadened. The sacrum appears light and spongy. Exostoses are not numerous. The left articular surface is broader than the right.

The changes in the vertebral column (Fig. 6) are most marked in the lower thoracic region, although all the bones are affected to a greater or less degree. There is a slight lateral curvature with the convexity to the left in the lumbar and lower thoracic regions, and a compensatory curvature with the convexity to the right in the upper thoracic and cervical regions. There is, also, an antero-posterior curvature due to the diminution in the size of the bodies of the eighth, ninth, and twelfth thoracic segments. The bones seem to be rarefied. Exostoses are numerous and in some places are very marked. The molten fringes are seen between the adjacent portions of the bodies of the bones, ventrally and laterally. The outgrowths of bony substance seem to take place equally from the cephalad and caudad bone, and the two lips meet over the intervertebral disk, forming, in the recent state, a long tumor of pyramidal shape. These formations are most marked between the third and fourth lumbar segments (Fig. 6, *a*), and between the eleventh and twelfth (*b*), tenth and eleventh (*c*), ninth and tenth (*d*), eighth and ninth (*e*), and seventh and eighth (*f*) thoracic segments. Nearly all the articular surfaces are deepened by outgrowths of bone. These hyperostoses above the sixth thoracic segment are less numerous and less robust. The articular facets for the ribs on the bodies and transverse processes of the thoracic segments are distorted and misshaped. In the lumbar region, particularly, the tips of the spinous processes are deformed by bony outgrowths.

The heads and necks of the ribs are distorted and their articular facets variously ornamented with exostotic projections.

On first examination of these specimens four possibilities suggest themselves: the case is one of acromegaly, of syphilis, of ostitis deformans, or of arthritis deformans.

The absence of involvement of the bones of the hands and feet

and of the face, together with the existence of a pituitary fossa of normal size, would seem to exclude acromegaly. The appearance of the subject would also serve to exclude this condition.

Syphilitic lesions of the bones are characterized by localized swellings or nodes projecting from the surface of the diseased bone and by areas of caries or necrosis. The formation of these lesions may follow acquired or inherited syphilis, irrespective of the growth of a gumma (Macnamara[2]). The absence of carious or necrotic lesions and the freedom of the shafts of the long bones from involvement in the process would argue against the specific origin of the disease.

Ostitis deformans, according to Ziegler,[3] is a disease of old age: this subject was not much beyond the forty-year mark. The bones of the skull are usually involved in the disease; the skull in this subject was quite normal in appearance, the bones being of proper thickness and presenting no exostoses. In ostitis deformans, also, the process involves the shafts of the bones, producing bendings, angular flexures, and various other striking deformities; in these specimens it will be seen that the shafts of the long bones are quite straight and that they present no evidences of disease, except for the bony formations at the muscular attachments. The vertebral column, it is true, presents a picture which is indicative of this disease; but, it will be seen later, this appearance is also characteristic of arthritis deformans. On account of the appearance of the long bones I have excluded ostitis deformans.

But one condition now remains, and I have diagnosed these as specimens of that condition, arthritis deformans, partly by exclusion and partly because the lesions are almost invariably in the joint regions. The appearance of the left femur and of the left acetabulum indicates that this process is one which has involved the entire structure of the joint and in which the balance between bone absorption and bone-deposition has been markedly upset.

It is quite unfortunate that the bones were beyond microscopic possibilities when first seen. But, in order to give an idea of the processes which have been at work to produce these remarkable architectural features, I will quote Ziegler.[3] The changes in the cartilages consist of fibrillation and cleavage or splitting of the superficial layers; to this is usually superadded extensive softening, with the consequent formation of cavities in the deeper layers next the bone. Along with these degenerative processes free hyperplastic proliferation takes place, and often leads to nodose thickening of the cartilage. The deeply-situated cavities due to softening are sooner or later lined by vascular medullary tissue which grows up from the bone. The

substance of the cartilage itself is often directly permeated by the growing marrow. When the deeper layers of the cartilage are thus traversed in all directions by medullary spaces, the remaining islands and bridges between these are generally converted into osteoid tissue and ultimately into calcified bone. The changes in the bones are for the most part retrogressive, and are chiefly of the nature of resorption; they lead to lacunar atrophy of the osseous trabeculæ, and sometimes entire lamellæ are destroyed, so that the bone gives way at the affected part. In the course of years, these changes lead to very marked deformities of the joints. Proliferation of the cartilage with subsequent ossification occurs mainly at the periphery of the articular head and of the articular cavity. In the former situation it gives rise to tuberous excrescences, and in the latter it causes the socket to be wholly or partially encircled with a ridge by which the cavity is often notably enlarged and deepened. The central parts of the articular head that are most subjected to pressure and friction are usually flattened, while the articular socket becomes wider. All of these changes take place whether the articular cartilage is preserved or not, and in the former case depend upon a subchondral atrophy of the bone, as a result of which the cartilage is undermined and collapses. If the cartilage becomes fibrillated and destroyed, the underlying bone is, of course, exposed, and, in particular, those parts of it that have been newly formed by subchondral ossification. Such bone is often very dense and in places has the compact texture and appearance of ivory. If the affected limb continues to be movable, the hard bony surface of the articular head, as a result of constant movement, is often polished smooth; or if the movements take place in one plane only, it is marked with parallel grooves.

In these specimens all of these changes have evidently taken place, and the condition is an old one. The resorption processes in the bone have caused the neck to become displaced and contorted; the growing of the marrow into the softened cartilage has formed the molten fringes which line the margins of the articular cavities, which border the articular heads of the bones, and which give the vertebræ the appearance which is known as spondylitis deformans. Later, the cartilage in the hip-joint has become destroyed, the articular head of the femur and the acetabulum have moved the one on the other and have resulted in the polishing of the surfaces, the formation of ridges, flattening of the parts, and eburnation.

Absence of involvement of the bones of the cranium, the symmetrical development of the lesions, the absence of general osteosclerosis, and the marked deformity are further reasons for considering the processes which have produced these lesions as those of

chronic arthritis deformans. In this disease, too, we find the most remarkable varieties of hyperplastic overgrowth and the most marked degenerative changes in the cartilages and bones.

How account for the exostoses along the muscular attachments? It is in every way probable that the resorption of bone in various portions of the skeleton has left the blood so overcharged with lime salts that the disturbance caused by the constant action of the muscles has been sufficient to produce these growths from the deposition of the circulating bone material.

REFERENCES.

[1] *Warren:* Surgical Pathology and Therapeutics, Philadelphia, 1895.
[2] *Macnamara:* Diseases of Bones and Joints, Third Edition, London, 1887.
[3] *Ziegler:* A Text-Book of Special Pathological Anatomy, translated and edited by Donald MacAlister, M.D., and Henry W. Cattell, M.D., New York, 1896.

Glucoside Constitution of Proteid Matter.

Pavy concludes a learned article on the above subject in the following manner:

The carbohydrate of the food is in part applied to the construction of proteid matter, and in this locked-up condition conveyed to the tissues to supply the needs of their growth and renovations. From the proteid of the tissues it may be cleared off by ferment action, and this is probably the source of the free carbohydrate found to be present to a certain extent in the various components of the body. There could be no doubt that in the grave form of diabetes the sugar eliminated is derived not only from the food, but also from the tissues. The glucoside constitution of proteid matter fitted in with this and afforded a ready explanation of the observed facts, all that it was necessary to assume being the existence in diabetes of the requisite ferment agency.—*Lancet*, October 17, 1896.

EDITORIAL.

THE NEED OF FUNDS FOR THE UNIVERSITY HOSPITAL.

We desire to call the attention of the graduates and the friends of the University of Pennsylvania to the present need for funds for the Hospital. The addition to the buildings, recently completed, doubles the capacity of the institution, but before the new part will be available for use it must be equipped. This will demand an additional expenditure of a large sum. With the most economical management of the hospital in the past there has been a large annual deficit. As the capacity will now be doubled an additional revenue must be secured. The University Hospital being non-sectarian has not appealed to our citizens, and has not, in consequence, received the generous bequests that most of our sectarian hospitals have. The character of the work done and the large amounts of money secured by the individual efforts of the managers of the Hospital well deserve the attention of the philanthropic throughout the entire State.

To meet the present absolute needs a bill has been introduced in the Senate and House of Representatives, at Harrisburg, asking for $50,000 a year for two years for maintenance, and $90,000 for furnishing and equipping the Agnew Wing and repairing the original building, which shows traces of the wear and tear of over twenty-two years.

The Hospital of the University of Pennsylvania has been actively at work for twenty-two years. The total number of patients treated in the wards of the Hospital is 20,934. The total number treated in the dispensaries is 133,078.

During the year 1896, the cost of maintenance of patients amounted to $113,140.02, and the total income to $97,110.83, leaving a deficit of $16,029.19. The Hospital is open to people of every station, age, and color, and invariably receives and treats, without charge, any accident cases occurring in the State of Pennsylvania.

Taking the year 1896 as an example of the work of the hospital, there were treated in the wards 1496 patients. Of these, 564 were from the Commonwealth of Pennsylvania outside of Philadelphia.

This number was distributed more or less evenly throughout the counties of the State, as will be seen by the following list:

Alleghany	15	Dauphin	7	Northampton	6
Armstrong	2	Erie	2	Northumberland	14
Blair	28	Elk	2	Perry	1
Beaver	9	Fayette	3	Pike	1
Bradford	13	Greene	1	Schuylkill	53
Bedford	3	Huntingdon	8	Somerset	1
Bucks	10	Indiana	1	Sullivan	3
Berks	13	Jefferson	2	Snyder	1
Clearfield	23	Lackawanna	26	Susquehanna	5
Cameron	2	Luzerne	44	Tioga	7
Crawford	1	Lancaster	9	Union	1
Chester	18	Lehigh	16	Venango	1
Columbia	10	Lebanon	9	Washington	1
Clinton	5	Lycoming	6	Westmoreland	4
Carbon	4	Montgomery	30	Wyoming	3
Clarion	1	Mercer	1	Warren	2
Centre	5	Mifflin	5	York	11
Cumberland	6	Montour	1	Unknown counties	8
Delaware	95	Monroe	5		
				Total	564

The claim of the Hospital for State aid is eloquently supported by these figures.

The services of the physicians and instructors in the wards of the hospital and in the dispensary are all rendered without charge. Thirty physicians are in attendance upon the Hospital and thirty-eight upon the dispensaries, making a total of sixty-eight.

The Hospital of the University of Pennsylvania is essentially a State institution. It not only carries on the work of a general hospital and a special hospital, but also that of the education of medical students (this year 923) upon whose skill and knowledge so many lives will depend.

The Medical Department of the University has been justly proud of the large amount of clinical instruction its students receive, a feature that has placed this school in the very front of American medical colleges. In order to maintain this high standard at the present time with the very large classes in attendance the clinical facilities must be extended. Otherwise the University is in danger of falling behind her sister institutions.

The Hospital, although a part of the University of Pennsylvania, has its own board of managers, and its funds and properties are held in special trust to be expended *solely* for hospital purposes.

Notwithstanding its services to the State, the institution has been built and supported largely by private means. The legislature

has on different occasions made liberal appropriations, but the amount derived from other sources has been much greater.

The completion of the D. Hayes Agnew Memorial Pavilion enables us, if we secure your aid, to make available 160 beds for the sick and wounded, in addition to the large number which the Hospital now maintains. The nursing needs of the institution will, of course, be correspondingly increased. The present staff of faithful and devoted women who do the nursing are already greatly overworked. Accommodation for additional nurses is absolutely necessary for the future development of the Hospital.

The maternity department is fulfiling a most useful function not only in caring for women during confinement, but also in educating young men to treat the dangers and complications of childbirth, which each of them may encounter in the practice of his profession. This department is eminently worthy of further assistance.

The Hospital points with pride to the last Annual Report, showing the vast amount of good accomplished with the means at its disposal.

May we not count on every alumnus and friend to call upon or write to the representative and senator of his district and place the just claims of the Hospital of the University of Pennsylvania clearly before them?

DR. J. WILLIAM WHITE, MR. GEORGE H. MCFADDEN,
DR. WILLIAM PEPPER, MR. JOHN SAILER,
DR. JAMES TYSON, DR. CHARLES B. PENROSE,
DR. BARTON C. HIRST, DR. DEFOREST WILLARD,
DR. JUDSON DALAND, DR. THOMAS J. YARROW,

DR. WILLIAM F. NORRIS, *Chairman*,
1530 LOCUST STREET.

SKIAGRAPHY IN PRACTICAL SURGERY.

THE development of the every-day practical application of skiagraphy in the diagnosis of many and various obscure conditions has been one of the most interesting features of Dr. White's service at the University Hospital during the past winter.

In many surgical diseases skiagraphy has been of inestimable value. Radical improvements are being made in the apparatus from time to time which greatly increase its usefulness. The present degree of excellence having been obtained so soon gives promise of greater achievements in the near future. With better forms of tubes, more powerful coils, and appropriate interrupters the time required to

secure a good skiagraph has been much reduced, and at the same time the definition is clearer.

The uses of the Röntgen apparatus have been dwelt upon in numerous contributions to current medical and popular journals. Perhaps the best known, but not the most important, of these is the accurate locating of foreign bodies. Every surgeon is familiar with the difficulty often experienced in finding such bodies. In the case of bullets, for example, many factors operate to change the direction of their course after entering the body, and a dissection to remove them usually proves futile. The same is true of needles and similar objects, as they have been known to travel long distances after having passed beneath the surface. The finding of these bodies is to-day by the aid of skiagraphy enormously facilitated, and their removal without risk is rendered possible in many cases that a few years ago would have been of necessity treated expectantly.

The cases of extraction of a jack-stone by gastrotomy and of a whistle through the esophagus have already passed into literature.

Dr. William T. Bull, of New York, *apropros* of the former case in writing on a case of esophagotomy says, "In the future an invaluable aid to diagnosis will be afforded by a resort to skiagraphy, as was done first by Dr. J. William White, whose case is recorded in *Annals of Surgery,* August, 1896, p. 238. In that case a jack-stone, lodged at the level of the second and third dorsal vertebræ, was successfully removed by means of gastrotomy. As White has pointed out, the skiagraph will not only indicate the existence of the foreign body, but point out its exact situation more clearly than one can estimate it by bougies, and thereby enable us to select the proper method of treatment."

Among the most important uses of the x-ray should be mentioned the evidence obtained in cases of supposed renal calculus. There has been no certain means hitherto of establishing the presence or absence of kidney stones before the operation, and they have not always been detected when present at the time of exploration. On the other hand, it is well known that the symptoms usually ascribed to renal calculi may be present in cases in which there is no stone.

Although there have been a number of observations in Dr. White's service up to the present time, they are not yet numerous enough for broad generalization, but they distinctly show that these concretions may be detected by means of the skiagraph.

Of equal importance will be its use in cases of encysted vesical calculi, those rare cases presenting the symptoms of stone in the bladder in which the examination by the sound is negative. The rule

followed by many surgeons heretofore, "never begin an operation for vesical calculus unless you have been able to demonstrate the presence of the stone by the sound at that time," will now have to be modified by inserting after sound, "or a skiagraph." It has been found that stones in the bladder are readily detected by the x-ray.

Quite as important as any of these is the ability by this means to be assured of the absence of foreign bodies in cases in which they are only supposed to exist. This has happened on several occasions in Dr. White's service at the University Hospital.

Patients have come to have needles, glass, and other foreign bodies removed, and as it is Dr. White's invariable custom at the present time to have a skiagraph made of every such case (if the offending substance was of such a nature as to be shown by the x-ray), it has been possible to assure a number of persons that the body supposed to exist was absent. This experience has also occurred in cases in which cerebral symptoms were said to have followed a pistol-ball wound of the head, it being supposed that the bullet had penetrated the skull. In these cases the symptoms—epilepsy, aphasia, etc.—have been sufficient to demand an operation if it could be ascertained that the ball was in the cranial cavity. But if a carefully made skiagraph did not show such a body, some other explanation for the symptoms had to be looked for. The freaks of pistol-balls after entering the body are well known, and these patients really supposed the bullets still remained, whereas they had rebounded or glanced and escaped.

In disease and injury of bones abscesses have been located, tumors recognized, epiphyseal separations diagnosed from fractures, ununited fractures clearly seen, and in doubtful cases—as in injuries of small bones near joints—the presence or absence of fracture has been clearly demonstrated. Luxations have also been shown, and in several instances the cause of limited motion after old injuries about joints could be demonstrated.

In two cases, both successfully operated upon afterwards, gallstones have been clearly seen in the negative, though no good print of them could be made, as they are only partially opaque to the rays and do not make a sufficiently intense shadow to secure good photographs. In many cases, however, this diagnosis—often quite difficult—will become scientifically exact, as the stones themselves may be seen instead of guessed at.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

The Ice-Bag in Pneumonia.

Broadbent (*Birmingham Medical Review*, November, 1896) gives the rules laid down by Dr. Lees for the use of the ice-bag in pneumonia as follows:

(1) Apply the ice-bag over the dull area, and especially over the *advancing edge* of the consolidation.

(2) If the area is large use two ice-bags at least, or three. Even young children may require two.

(3) Expect to find a distinct *local* effect (improvement of percussion note, less bronchial breathing, looser râles) on careful physical examination, after the ice has been applied for twenty-four hours.

(4) If fresh areas of consolidation develop use additional bags. Four, or even more, may be used in a bad case. The amount of the dose is as important as it is with drugs.

(5) Take the temperature every half-hour for the first three hours, afterwards every two hours.

(6) Apply hot-water bottles to the feet and legs. For children apply these *before* the ice is applied.

(7) Examine the physical signs twice daily, and shift the bags accordingly.

(8) If pericarditis is present, place one ice-bag over the heart.

(9) If the temperature be below 99° F., or hands cold, or lips bluish, remove the bags for an hour, then replace them, and use them for two- or three-hour periods, with one- or two-hour intervals.

(10) If in a severe case there is distinct cyanosis, and a rapid, feeble pulse, consider whether leeches (in urgent cases venesection) would not relieve the right heart.

(11) In all cases see that sleep is secured during the first three or four nights. If the relief afforded by ice-bags does not suffice for this, give chloralamide or morphine.

(12) Pneumonia treated vigorously with ice within twenty-four hours after the rigor may sometimes be aborted.

Tetany in Childhood.

Hauser (*Berliner klinische Wochenschrift*, No. 35, 1896), investigating the question of the occurrence of tetany in childhood, examined 280 children, directing

particular attention to the galvanic examination of the nerve-trunks. Some of the children were healthy, others had tetany, others spasmus glottidis or spasmus nutans, others rachitis and other diseases. They ranged in age from 10 days to 10 years. As is well known, tetany in children is closely related to spasmus glottidis, some even asserting that this is a pathognomonic sign of tetany, and that the contractures of the extremities such as especially affect adults have nothing to do with tetany of children. Hauser believes Erb's symptom, the increase of the galvanic irritability of the nerves, to be the most constant and most important symptom of tetany. Trousseau's symptom occurs constantly and is pathognomonic, as it is present in no other disease. Choostik's symptom, increase of the mechanical irritability of the nerves, especially the facial, is almost always present, but is not pathognomonic, as it may occur, though to a less degree, in some children not affected with tetany. There is an immediate association between tetany in childhood and dyspepsia. Hauser believes we are justified in designating tetany in cases in which at the time of examination spontaneous contractures or spasms are absent, if there be present Trousseau's or Erb's symptoms. Spasmus glottidis unaccompanied by either Erb's or Trousseau's symptom does not indicate tetany, although in many cases a connection exists, as he found in cases of spasmus glottidis pathognomonic signs of latent tetany. The majority of cases of spasmus glottidis, however, are in no way connected with tetany, but are more dependent upon rachitis. There is, therefore, a true tetany in childhood, which in some cases is like that of adults, presenting the contractures of the extremities. There is usually present Erb's, Trousseau's, or Choostik's symptom, some one or another,—at times all three. Spasmus glottidis and eclamptic spells play an important *rôle*. The etiology is not clear. It never affects healthy children. Rachitis is of important predisposing influence. The direct cause of the attack is some gastro-intestinal disturbance, proven by the frequent association of tetany and acute dyspepsia, and the effect of treatment directed to such conditions. Tetany in childhood is a dangerous and frequently fatal disease. In the treatment the primary indication is to clear out the gastro-intestinal tract by lavage and cathartics. Narcotics, such as chloral and bromides, are of service, especially in cases of dangerous spasmus glottidis.

A Case of Ectocardia.

Grant (*British Medical Journal*, December 6, 1896) details the following case: A child was born at the eighth month with the heart external to the chest wall and beating vigorously. The child was placed in an incubator and the heart wrapped in lint, kept moistened with saline solution; there was no pericardium.

The heart occupied the same relative position outside as it would if normally situated. The ventricles contracted so as to shorten the long axis of the heart, with a rotary movement to the right, bringing the right ventricle almost to the front. Palpation and auscultation caused no change in the rhythm nor suggested sensation. The sounds at the base were clear and distinct; no murmur being audible. The child cried, swallowed milk, passed meconium, and acted in every way like a normal child. It lived about six hours.

Physiology and Pathology of the Thyroid Gland.

Horsley (*British Medical Journal*, December 5, 1896), in a most careful article, so characteristic of that investigator, states that more than 100 years ago King, of Guy's Hospital, showed, by direct experiment, that the colloid material of

the thyroid gland passed into the lymphatics, but this fact was lost sight of until Schiff, in 1859, showed that the organ was important to life. In 1884 the same writer placed the question upon an accurate basis. Since that time numerous experimenters have worked at the subject, Murray and Ord being the first to show that the fatal symptoms known as myxedema can be dissipated by the administration of the thyroid gland. Since 1891 the microscopic construction of the gland has undergone marked extension, especially that of the parathyroid.

He summarizes his paper thus: It is now generally agreed (and the more so since the recent extensive researches of Mr. Edmunds) that, whereas myxedema and cretinism result from the simple loss of the function of the thyroid gland, exophthalmic goitre in its various degrees results from a perversion of that function.

Prophylactic Injections in Diphtheria.

Lohr (*Lyon Médical*, January 3, 1897) reports the following facts: There were constantly occurring in the wards of the Children's Hospital sporadic cases of diphtheria. From October 1, 1894, to June 30, 1896, there were twenty-three such cases. They tried giving the children contiguous to the diphtheria cases prophylactic doses of antitoxic serum, but the cases still persisted; from October, 1894, to November, 1895—that is, during the time when only a part of the children were given the dose—there were twenty cases. Then all children were injected. In the next year there were only three new cases, and they developed thirty to forty-one days after the prophylactic injection. Injections were also given in the pavilions devoted to scarlet fever and in the one for measles, and only one case of diphtheria developed. Formerly there were many cases in these wards.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

Removal of the Gasserian Ganglion.

A. Laguaite (*Lyon Médical*, November 15, 1896) operated as follows: Incision beginning below the malar bone and going up as high as the external angular process of the frontal bone and curving down in front of the ear. The anterior and posterior ends of the zygoma were divided with the saw. This flap with the piece of bone attached was turned down. The coronoid process was divided and turned up with the temporal muscle. With a periosteal elevator the inferior part of the temporal fossa was bared until the oval foramen was reached. Hemostatic forceps were placed on the inferior dental and lingual nerves, and the latter divided beneath them.

The base of the skull was trephined a short distance in front and outward of the oval foramen; this opening was then enlarged to the oval foramen. The dura mater was opened with a grooved director, and the trunk of the inferior maxillary

followed, while the assistant elevated the brain and dura mater. A finger introduced served to loosen the dura mater on the superior surface of the ganglion and recognized the superior maxillary nerve. This nerve was then caught on a hook and divided with scissors. The inferior surface was freed in the same manner as the superior. The ganglion was then grasped, twisted, and pulled away with a hemostatic forceps. The soft parts were replaced and sutured. A strip of gauze was left from the bottom of the wound. No bone sutures were used. To prevent bleeding a preliminary ligation of the external carotid was performed. Including this the operation occupied one hour. The dressing was changed five days later, and thereafter daily. Relief was complete, although ulceration of the cornea occurred. The ligation of the external carotid was a perfect success in preventing hemorrhage.

[The operation is described as being that of Poirier, but it is practically that of Mr. Rose.—Ed.]

Luxation of the Peroneal Tendons.

Perimoff (*Revue de Chirurgie*, September 10, 1896) gives the case of a young man, aged 22 years, who, two years previously, had luxated the peroneal tendons of the left foot by making a false step. In walking he endeavored to hold the foot at a right angle to the leg and avoid all movement of the joint, because as soon as the ankle was moved the tendons slipped from their proper place upon the malleolus. The following operation was done by Professor Kousmine. A semilunar incision was made behind the external malleolus. A rectangular incision was made through the periosteum of the external malleolus, the base being on its outer edge. With a chisel a piece of bone was then raised, being left attached by the base of the periosteal flap. This small piece of bone was kept resting on its edge by two nickel nails introduced one above and one below. The limb was placed in plaster. At the end of seventeen days the dressing was changed and the pins removed. The projecting piece of bone was found firmly fixed in its new position and effectually prevented any luxation of the tendons. A new bandage was applied and left on four weeks. The results were perfectly satisfactory.

Three Cases of Ruptured Gastric Ulcer treated by Laparotomy.

T. H. Morse (*British Medical Journal*, February 13, 1897) reports three cases of perforation of the stomach by gastric ulcer for which he operated. Two recovered and one died.

The first case was operated on five hours after the onset of the symptoms. The ulcer was sutured, the peritoneum washed out, and recovery was complete in a month.

Case two, woman, aged 21 years. While seated in a chair the patient was seized with intense pain in the stomach. She screamed out, "I am dying." She tried to vomit but could not. The operation was commenced four and a half hours after the onset of the symptoms. Ether was given, an incision three and a half inches long made one inch to the left of the middle line commencing at the cartilages of the ribs and extending down towards the umbilicus. As soon as the peritoneum was opened stomach contents began to well up into the wound. The hole in the stomach was one-third of an inch in diameter on the anterior surface, and about one inch above the attachment of the omentum. Attempts to wash out the stomach failing, its contents were squeezed out through the ulcer. Two rows of Lembert's sutures, each of which was one inch in breadth, were inserted, extending

one and a half inches in both directions beyond the perforation. The abdomen was washed out with about twenty pints of water at a temperature of about 105° F. A drainage-tube was left in and the wound closed. The operation lasted forty-five minutes. Shock was severe. No food by the mouth was given for forty-eight hours, after which the administration of liquids caused no inconvenience. She recovered.

The third case was practically in collapse and was operated on twenty-four hours after the onset of symptoms. She lived only a few hours.

The duration of life after perforation of the stomach may be estimated at twenty-four hours, hence the importance of early and distinct diagnosis. The second case had an abscess of the left pleural cavity following the operation, and it appears that this is a frequent cause of death. It appears that septic materials rapidly pass through the diaphragm from below; to prevent this thorough cleansing of the peritoneum at the time of the operation seems the only remedy.

Tumors of the Bladder.

Pousson (*Annales des Maladies des Organes Génito-Urinaires*, November, 1895) in considering the question of operating for the relief of vesical tumors says that the value of surgical intervention is not to be doubted. The painful urination and bleeding which so often accompany them almost invariably cease as soon as the bladder is opened, and enable the patient to end his days in peace. Many growths which have pursued a benign course for many years are liable at any time to be transformed into neoplasms of extreme malignity. He believes partial resections have given better results than total resections of the bladder. Of the latter the one done by Pawlick only gave ultimate good results, the patient living two and a half years. Of sixteen cases of vesical tumors which have come under his notice, eight were operated on, six by himself. Fourteen were males and two females. The tumors when they came under observation had given rise to symptoms from six months to thirty years previously (an average period of over six years). The average length of life in the eight operated cases was one year four months and two weeks; the average for the non-operative ones, one year two months and three weeks. If, however, the case of an old man, aged 73 years, who lived five years more with a small tumor without pain or hemorrhage, be excluded, then the period of survival of the non-operated cases falls to eight weeks.

The author did not attempt resection, but contented himself with curetting or dissecting the growth away or applying the cautery. Three of the cases were papillomatous and three epitheliomatous. The incision employed was the hypogastric. One patient died on the third day of apparently iodoform-poisoning; a second patient, on whom an operation for recurrence had been performed, died of anuria.

Trephining for the Relief of Intracranial Pressure.

Jaboulay (*Lyon Médical*, September 20, 1896). Trephining for cerebral tumors, while it rarely affords relief, usually aggravates the troubles. The dangers of opening the dura mater are evident; the increased pressure causes a hernia of the cerebral substance which may prove fatal. He has even seen the same bad results follow an operation which was extradural. Tumors in inaccessible regions if operated on will pursue the same bad course that follows the use of iodide of potassium, which aggravates the cerebral edema and makes the patient worse. With tumors of the cortex the case is different. In one case he removed a glioma

from the right frontal lobe, of the size of a small mandarine. The pain ceased as well as the psychical symptoms, the papillary edema and the paralysis of the left upper extremity. He thinks that the lack of relief in some cases may be due to the small amount of bone removed, and suggests separating the entire vault of the skull from the base. This he did in the case of an epileptic. The operation was done in four stages, with intermissions of several weeks to allow the scalp to regain its vitality. After two of the operations cerebral disturbances followed which caused some anxiety but subsequently subsided. The skull-cap was so mobile that it showed the variation in volume of the brain due to the circulation and respiration. The epileptic seizures were not cured and the amelioration was only slight. The mobility was much reduced six months later as the detached bone became united again by non-extensible fibrous tissue. On this account, while he states that he has not had an opportunity of observing the results on a case of cerebral tumor, the operation cannot be of any permanent benefit.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

The Medical Treatment of Inebriety.

At a recent meeting of the New York State Medical Association T. D. Crothers, of Hartford, Conn. (*Universal Medical Journal*, January, 1897), entered a plea for a more careful and general study of inebriety by physicians, particularly as regarded the etiological factors entering into individual cases. He said that the removal of all spirits at the beginning of the treatment was always followed by the best results, and the reaction could be effectually neutralized by giving one-twentieth grain (0.003 gramme) of nitrate of strychnine every four hours, with the bromides, for the relief of insomnia. This treatment should be supplemented by a calomel purge, the use of hot baths, and vigorous massage, and by the administration, at stated intervals, of such nourishment as hot broths. Where a gradual withdrawal of spirits was insisted upon, the form of spirits should be changed to the wines and beers. It would be found that the withdrawal of liquor in these cases often resulted in the sudden and unexpected development of grave organic disease,—*e.g.*, tuberculosis and dementia. Inebriety was not infrequently the result of an unusual and prolonged strain, or was due to climatic conditions and environments; hence, when such factors are present, every effort should be made to eliminate these factors, otherwise there would be a speedy relapse. Some of the preparations were useful in averting the "drink-storm," but the administration of drugs, like apomorphine, with the idea of causing a disgust for liquors, was dangerous and but rarely satisfactory. The key-note to the successful treatment of these cases was to be found in sharp elimination. Where the bromides were indicated, they should be given in large doses,—from 50 to 100 grains (3.25 to 6.50 grammes); these doses should not be continued for more than a few days. No one remedy was capable of meeting a wider range of conditions than the Turkish bath associated with massage.

Suprarenal Extract in Addison's Disease.

Osler (*Johns Hopkins Hospital Bulletin*, November and December, 1896, p. 208) recently had under his care a girl, aged 21, with well-marked Addison's disease. The pigmentation began eleven months before admission, on the face, and spread over the body; weakness, loss of weight, and itching of the skin followed. About twenty black spots, like moles, were eventually seen on the skin. She was put on a glycerin adrenal extract, and took the equivalent of half a gland per diem. On the ninth day of this treatment the girl became delirious and died of collapse. At the necropsy the suprarenal bodies were found to be all caseous, and in parts calcareous, but the solar plexus and the splanchnic nerves were normal. Osler discusses the question whether the toxic symptoms, of which the patient died, were due to the administration of the extract; but seeing, first, that cases of Addison's disease often die in this manner quite apart from this form of treatment, and, secondly, that the dose was not excessive, he came to the conclusion that the treatment could not be held responsible for the fatal result.

Urea as a Diuretic.

Bettmann, of Erb's clinic (*Berliner klinische Wochenschrift*, December 7, 1896), relates the results of this treatment in twelve cases,—three of hepatic cirrhosis with much ascites, four one-sided serous pleurisy, five of dropsy of several serous cavities. In no case was there any marked beneficial effect. The increase in the secretion of urine was never very considerable. In one case tapping was had recourse to five days after the commencement of the treatment. The fluid reaccumulated after the tapping, notwithstanding the administration of urea. In another case the combination of tapping with the urea treatment seemed to have a decidedly favorable effect. An examination of the tables shows that an increased diuresis during a lengthened use of urea occurred in only three cases; but here an improvement would have been expected without any diuretics. In no case was there any evidence of renal disease. Urea had not shown itself in these cases to be either a rapid or powerful diuretic, but the number of cases was small. No unpleasant effect followed the administration. A slight diarrhea occasionally observed was beneficial. It is desirable to investigate whether the effects of tapping can be increased by the use of urea.

Treatment of Epilepsy.

Flechsig (*Neurologische Centralblatt*, January, 1897) reviews the unfavorable results of the Flechsig treatment of epilepsy with a combination of opium and bromides, as reported by several writers recently; he considers that in the fatal cases recorded no causal relation to the treatment has been shown, and points out that a fatal result is common enough in status epilepticus without the opium treatment. A careful watch should be kept by the physician for any untoward symptoms, which would indicate withdrawal of the drug; and Flechsig is more inclined to blame the physician than the drug for the fatal results. His own experience of his treatment by increasing doses of opium has been most satisfactory: six cases out of fifty treated thus have had no recurrence for two and a quarter years, and all the cases treated were severe cases of many years' duration, which had resisted all previous treatment. He begins with simple bromide treatment, and later, if there is no improvement, adds opium in increasing doses. If, however, the opium be used, the patient must be treated as one who is seriously ill: skilled nursing and the most careful medical attendance are essential to the treatment.

The Bath Treatment of Scarlet Fever.

Schill (*Jahrbuch für Kinderheilkunde*, Bd. xliii, p. 260) reports the results of the systematic treatment of scarlet fever by baths. The cases numbered 110, of which sixty-three were treated by himself and by Schellenberg. The temperature of the baths was 28° R. (95° F.), and each lasted ten minutes. During the first week of the illness they were given twice a day, afterwards once a day. Of Schill's sixty-three cases, only one, in which, in addition to nephritis, there was a submaxillary abscess, developed severe symptoms. Schellenberg had no case of nephritis among the cases in which the treatment could be carried out. Desquamation was observed only on the fingers, the daily baths removing the epidermis as it exfoliated. Schill believes that the scarlet-fever poison is eliminated by the skin, and that the constant removal of the desquamating epidermis favors this elimination, and so tends to render the attack mild, and to prevent nephritis and other complications. For the same reason he condemns fatty applications to the skin.

An Instance of Trional-Poisoning.

Gierlich (*Centralblatt für innere Medicin*, No. 51, 1896) had a patient afflicted with morphinomania of a slight degree who, during a period of two months, took daily on account of sleeplessness about forty-five grains of trional. Serious nervous symptoms developed. Marked ataxia, a light tremor over the whole body, and a deep depression of mind which could only be broken by strong stimulus, were the chief symptoms. The memory was much affected, as were writing and speech. There were no delusions. After the trional was withheld (the morphine being continued in the usual dose) the condition gradually improved, but it was five weeks before the last traces of nervous disturbance disappeared. The practical lesson in this case is that if trional is to be given for a long time, the dose must be greatly reduced or omitted altogether occasionally, in order to allow its complete elimination.

Guaiacolate of Piperidine in the Treatment of Phthisis.

Chaplin and Tunnicliffe (*British Medical Journal*, January 16, 1897) have employed as a substitute for creosote in the treatment of phthisis piperidine guaiacolate, which not only contains an antiseptic moiety, but also a constituent which possesses a nervine and vascular tonic action. The chemical property of this new synthetic compound which from a pharmaceutical stand-point is most worthy of note is the relative solubility of this salt. When the insolubility of the carbonate of guaiacol is borne in mind this becomes emphasized. Brunton and Tunnicliffe have shown that piperidine, when given hypodermically, slows the heart, raises the blood-pressure, and greatly increases reflex excitability. In suitable doses, therefore, piperidine must be regarded as a cardio-vascular tonic and spinal stimulant. Fourteen cases of phthisis were chosen at haphazard, and were given at first five grains of guaiacolate of piperidine three times a day, the dose being gradually increased to twenty or twenty-five grains three times a day. As a result of this treatment there was considerable improvement in all of the cases. The authors draw the following conclusions: (1) That experience has shown that guaiacolate of piperidine is a perfectly safe drug in doses of five to thirty grains three times a day; (2) that it causes no unpleasant effect; (3) that it is exceedingly well borne by the stomach, and in this respect is equal to any other derivative of creosote; (4) that patients, while under its influence, improved in appetite and general strength.

OBSTETRICS.

UNDER THE CHARGE OF

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ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

Delivery Three Years after Symphyseotomy.

Hansen, of Copenhagen (*Hospitals Tidende*, June, 1896), reported the case of a IV-para whom he delivered three years after a delivery by symphyseotomy. The patient had a contracted pelvis, with a conjugate of three and a quarter inches, and was delivered at her first confinement after great difficulty of a dead fetus, which had presented transversely. The second delivery was completed by symphyseotomy, the fetus presenting by the vertex but not engaging at the pelvic brim. Two years later she aborted at the third month, and a year after she presented herself to Hansen in an advanced stage of pregnancy. The general condition was good and locomotion normal, and she continued to perform her daily work.

Upon examination it was found that the pubic bones were separated sufficiently to admit the tip of the little finger between them and that there was a marked motion between them in walking. Three weeks later she fell into labor. The fetus presented transversely and soon became impacted in the pelvis, but labor was easily terminated by version. After delivery the pubic bones were found to be separated more than one and a half inches. A firm pelvic bandage was applied. Five weeks later the woman was able to walk a quarter of a mile without discomfort. At the time the case was reported the bones were separated about one-half inch.

Extraordinary Hereditary Prolificacy.

A. Valenta (*Wiener medicinische Wochenschrift*, No. 3, 1897) refers again to the extraordinary case of plural pregnancies reported by H. X. Boër in 1808. The patient was a woman, aged 40 years, who suffered from epileptic fits, and during a married life of twenty years had given birth to thirty-two children in eleven pregnancies. Twice she gave birth to quadruplets, six times to triplets, and thrice to twins. Twenty-six of the children were boys, six were girls. Twenty-eight were born alive and four dead. Her first pregnancy was at the age of 14 years and resulted in quadruplets. The mother herself was one of quadruplets, and her mother had a family of thirty-eight children, and died in the puerperium after giving birth to twins. There was an hereditary history of plural births on the father's side, he being himself a twin.

Puerperal Herpes.

Dr. Lutaud (*Journal de Médecine de Paris*, July 12, 1896) describes five cases of acute pyrexia occurring between the second and fifth days after confinement or abortion, in each of which the febrile attack terminated by an eruption of facial (usually labial) herpes. In each case the attack was ushered in by rigors, the pyrexia was severe, rising to 103° to 104° F., and in each case, after the appearance of the herpes, the patients rapidly recovered.

Lutaud calls attention to the disquieting nature of these symptoms and their liability to be confounded with those of grave septic infection, and suggests that when strict antiseptic precautions have been taken in the conduct of labor or abortion, and no local condition can be found to account for subsequent rigor or pyrexia, it may be well to remember that the explanation of these phenomena may sometimes be found in the occurrence of the herpetic disorder described.

Inguinal Hernia containing a Pregnant Fallopian Tube.

Jordan (*Münchener medicinische Wochenschrift*, No. 1, 1897) reports the following case from Czerny's clinic in Heidelberg: The woman had undergone several operations for pyosalpinx and vesico-vaginal fistula. The pyosalpinx had ruptured into the right broad ligament, the pus finding its way under Poupart's ligament where it had been evacuated, leaving a scar. The patient had been seized with severe abdominal pain and repeated vomiting, and suspecting pregnancy had visited the clinic for examination. Upon admission she appeared very anemic with a pinched face and rapid pulse. Above the scar in her right side was a swelling as large as a fist and tympanitic on percussion. Below the scar was another tumor smaller in size, soft, and non-reducible. A third swelling was found to the outer angle of the scar corresponding in position to the internal inguinal ring. This was the size of an apple, soft, irreducible, and painful on palpation. High rectal enemas were administered and resulted in neither stool nor flatus. Purgatives were not retained. Operation was decided upon two days after admission on account of increasing severity of the symptoms of intestinal obstruction. An incision was made parallel to Poupart's ligament showing a hernial sac containing a large mass of blood-clots, a fetus about three months old, the uterine adnexa, and coils of intestine. The wound was cleaned as much as possible and tamponned with gauze. The vomiting continued and death occurred the following day. It was found by autopsy that the intestinal obstruction was caused by numerous adhesions which were beyond surgical relief.

Symmetrical Malformations.

Arthur Stern (*American Journal of Obstetrics*, March, 1897) reports a case of perodactylus symmetricus observed in a female child 6 years old. The child is in robust health, and, despite the fact that the third finger and metacarpus are wanting on both sides, can use the hands for all purposes with freedom. The mother attributes the child's condition to the fact that she was frightened by a live lobster during her pregnancy.

Oxytocic Action of Quinine Sulphate.

Schwab (*Journal de Médecine de Paris*, November 29, 1896) reports two cases which illustrate the power of quinine to increase the force of weak uterine contractions during labor. Usually the drug acts within twenty to thirty minutes, and should be given in two doses of eight grains each, repeated after an interval of ten minutes. It is indicated when uterine contractions are insufficient or inertia exists during the dilatation of the cervix, and when the health of the mother or child is threatened, especially when the membranes have ruptured and delivery must be hastened.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

Tuberculosis of the Ovary.

Wolff (*Centralblatt für Gynäkologie*, No. 46, 1896) believes tuberculosis of the ovaries is not so rarely met with as is generally supposed. He investigated seventeen cases of women who had died of tuberculosis, and in five of these he found tuberculous affections of the genitals; in three cases tubercular disease of the ovaries on both sides could be demonstrated.

A Contribution to our Knowledge of Endometritis, with Particular Reference to the Retention of Chorion and Decidua.

Heuck (*Centralblatt für Gynäkologie*, No. 6, 1897), from a microscopical study of portions of endometrial tissue removed by the curette from seventy women, comes to the following conclusions:

(1) That except where there exists new growths or adnexa disease a very important and frequent cause of endometritis is the presence of long-retained portions of chorion and decidua.

(2) In cases of long-continued hemorrhage following abortion almost always endometritic processes are to be found, and usually the endometritis is diffuse.

(3) In the greater number of cases of hemorrhage after abortion the endometritis antedated the pregnancy.

(4) The determination of the presence of chorion villi is not always possible and not always necessary to prove the etiological relation between hemorrhage and abortion.

(5) In a few cases where there is a history of hemorrhage and abortion the microscope cannot alone determine a diagnosis.

(6) Metrorrhagia is observed both after abortion and where a small portion of chorion or decidua has been retained.

(7) In a very large number of cases of hemorrhage after abortion giant cells are to be found for a long time, but they are of no particular pathological importance.

Regarding Fatal Pulmonary Embolism in Gynecological Diseases.

Gessner (*Centralblatt für Gynäkologie*, No. 6, 1897) believes the production of thrombosis and the resultant pulmonary embolism is always brought about through the concomitant action of several causes. The origin of the thrombosis is inflammatory disease acting either directly within the blood-channel, or the inflammatory process arises in the tissue surrounding the blood-vessel, and then it extends to the blood vessel wall. Further important factors which favor thrombosis are the presence of anemia and changes in the heart. These last conditions are most often found with fibroid tumors, which accounts for the greater number of instances of

thrombosis and pulmonary embolism associated with this disease. Besides fibroid tumors the malignant new growths may predispose the patient to thrombosis. The writer considers mechanical causes to be of very little moment. The characteristic increase of the pulse frequency which Mahler has described in these cases Gessner has not observed in all cases. The careful observation of the pulse after operation is always of the greatest importance. He agrees with Mahler and Wyder that in fatal pulmonary embolism the thrombosis usually occurs in the large pelvic veins. The separation of emboli is without doubt mechanical. The treatment should be chiefly prophylactic. If in spite of this pulmonary embolism does occur the patient is best treated with hypodermic injections of ether and elevation of the upper part of the body. For the subjective symptoms morphine hypodermically has a favorable influence.

The Bacteriology of Diseased Adnexa.

Kiefer (*Centralblatt für Gynäkologie*, No. 42, 1896) sought to determine the question as to the presence of bacteria in pyosalpinx, what method of examination is of the greatest practical value, the cover-glass preparation or culture; the proportion of the different species, and the average virulence of the pyogenic bacteria found. He made cover-glass preparations and cultures from forty cases of pyosalpinx or ovarian abscess, in all of which the pus had soiled the peritoneum during operation. The results are shown in the following table:

Cover-Glass Preparation.	*Culture.*
52½ per cent. contained germs.	40 per cent. contained germs.
Of these,	Of these,
32½ per cent. were gonococci.	22½ per cent. were gonococci.
22½ " " " bacteria coli.	10 " " " bacteria coli.
7½ " " " streptococci.	2½ " " " streptococci.
5 " " " staphylococci.	5 " " " staphylococci.

Thus it is shown that, although cover-glass preparations show the presence of bacteria, they do not give information regarding their vitality or degree of virulence. The gonococci were largely in majority, next the bacteria coli, the latter mainly found in ovarian abscesses. None of the forty cases died from purulent infection of the peritoneum, which again proves the fact that bacteria confined and encapsulated in closed cavities soon lose their virulence; they die from their own products,—the toxins. The average time determined from the formation to the sterility of the pus is about nine months.

The Pathology of Uterine Prolapse.

Winter (*Arbeit aus dem Gebiet der Geburtshülfe und Gynäkologie*) describes two forms of uterine prolapse. One is the result of a relaxation of the peritoneum and ligaments, with retroversion and descent of the uterus (through the latter an inversion of the vaginal walls results); in the other form the prolapse begins with a relaxation and descent of the vaginal walls. A moderate degree of primary uterine prolapse is usually associated. In the treatment of the first form, vagino- or ventrofixation is to be considered, while in the second form the various plastic operations of the perineum and vagina are indicated. The obliteration of the cystocele is recommended, while the amputation of the cervix should be performed only when a true chronic hypertrophy is present, and not in the cases of apparent elongation.

PATHOLOGY.

UNDER THE CHARGE OF

JOHN GUITÉRAS, M.D.,

ASSISTED BY

DAVID RIESMAN, M.D.

The Preparation of Anatomic Specimens by the Formalin-Alcohol-Glycerin-Potassium-Acetate Method.

Melnikow-Raswedenkow (*Centralblatt für die allgemeine Pathologie und pathologische Anatomie*, February 10, 1897) gives the details of a method, already published in abstract, by which anatomic preparations can be preserved in their natural color.

The specimens are treated first with formalin, then with alcohol, and finally with glycerin and potassium acetate. The author has devised the following schema of his method:

Step I.—*Fixation of Specimen; Change of Color.* (1) *Dry Method.*—Cotton saturated with undiluted formalin.

(2) *Moist Method.*—Cotton soaked in 10 per cent. formalin with the addition of—

(*a*) Gases: (1) H_2O_2; (2) H_2S.

(*b*) Reducing substances: (1) Hydrochinon; (2) hydroxylamin; (3) pyrocatechin.

(*c*) Reagents rich in oxygen,—*e.g.*, potassium chlorate.

(*d*) Acetates: (1) Potassium acetate; (2) sodium acetate; (3) aluminum acetate; (4) ammonium acetate; (5) calcium acetate; (6) magnesium acetate; (7) strontium acetate; (8) nickel acetate; (9) barium acetate; (10) manganese acetate.

(*e*) Various combinations of reagents of group *b* and *c* with those of group *d*; the best is—

Sodium acetate 4 per cent.; potassium chlorate 0.5 per cent.

Step II.—Restoration of color by means of alcohol, 50, 70, and 95 per cent.

Step III.—Preservation of color in glycerin containing an acetate.

Small organs or pieces of organs are immersed in the fixing solution and then into alcohol; in the case of large organs injection first of a fixing solution, then of alcohol is recommended.

Explanation of the Schema.—The organ, without previous washing in water, is laid on cotton saturated with pure formalin. This method is especially valuable when it is desired to preserve mineral or mineral-like deposits,—*e.g.*, uric-acid infarcts of the kidney. The specimens preserve an almost natural color for more than a year. In the moist method cotton is saturated with 10-per-cent. formalin containing any one of the reagents under *a*, *b*, *c*, or *d*, and is then wrapped completely around the specimen. When 10-per-cent. formalin, with 3-per-cent. sodium acetate, and 0 5-per-cent. potassium chlorate is employed, about forty-eight hours are required for fixation.

In the second step the cotton already used is squeezed out, and then weak alcohol, 60 per cent., poured on. After three or four days alcohol of about 80 per cent. is substituted, and at the end of a week the strength is raised to 95 per cent.

Afterwards the specimen is transferred to a conserving solution (glycerin, 20; potassium acetate, 15; distilled water, 100), in which it can remain perpetually.

All the fluids employed in this method can be used a second time.

At the conclusion of his paper the author offers an explanation of the mode of action of his method, which, however, it is not necessary to reproduce here.

The Rapid Diagnosis of Löffler's Diphtheria Bacillus.

Schanz (*Berliner klinische Wochenschrift*, January 18, 1897) maintains that there is no positive criterion by which the true diphtheria bacillus can be recognized in culture after twenty-four hours. The pseudo-diphtheria bacillus is, culturally, practically indistinguishable from it, differing only in its lack of virulence, but in the manner of reporting now in vogue—at the end of twenty-four hours—no account is taken of this fact. Hoffmann considers the pseudo-diphtheria bacillus a constant inhabitant of the mouth. Roux and Yersin found it twenty-six times in fifty-nine children of a village on the coast of France in which diphtheria was entirely absent. Bech discovered it twenty-six times in sixty-six healthy children. In view of this the author asks what value a method can possess by which, in the required time of twenty-four hours, it is impossible to distinguish the true diphtheria bacillus from a constant inhabitant of the mouth.

The length of the bacilli has, as suggested by Martin, been frequently considered a characteristic feature, but Schanz has found in the conjunctival sac very long bacilli with all the qualities of the Löffler bacilli, except that they were non-virulent. This bacillus, formerly considered the cause of xerosis of the conjunctiva, is, however, capable, when injected in large doses into animals, of causing a reaction.

As a further proof of the relationship of this organism and the diphtheria bacillus, the author refers to a peculiar similarity in culture, especially on white-of-egg. The true diphtheria bacillus on this medium exhibits a sort of giant-growth, and presents true branching, a phenomenon also observed in the growth of the conjunctival bacillus.

In view of all these facts it is plainly not possible to distinguish the virulent from the non-virulent bacillus, and too much importance should not attach to the bacteriologic diagnosis without determination of virulence, especially when the diagnosis is made within twenty-four hours.

Cancer of the Stomach with Unusual Metastasis.

Israel (*Berliner klinische Wochenschrift*, January 25, 1897) reports a case of gastric cancer in a man 57 years old, in which the stomach was no larger than a small fist, the lesser curvature being greatly shortened, and occupied by a deep gangrenous ulcer. The metastasis had spared the organs usually involved in cancer of the stomach,—namely, the liver, lung, spleen, and kidney. Secondary nodules were, however, found in many other localities,—the retrogastric, mediastinal, and retroperitoneal lymph-glands; both suprarenals, the tail of the pancreas, the left testicle, and both tonsils; also the mucous membrane of the jejunum and colon, and the rectum, in which the lowest metastasis was situated two centimetres above the anus. The mesenteric glands are but slightly affected. During life a left-sided recurrent paralysis had existed. At the autopsy it was found that one of the mediastinal glands at the side of the trachea had become as large as a hazel-nut on account of cancerous infiltration. A cancerous periadenitis had fixed the left recurrent laryngeal between the gland and the trachea; the nerve, for a distance of a little less than one centimetre, was infiltrated.

The distribution of the secondary growths indicates that metastasis took place both along the lymph-paths and the arterial system.

DERMATOLOGY.

UNDER THE CHARGE OF

LOUIS A. DUHRING, M.D.,

ASSISTED BY

M. B. HARTZELL, M.D.

Applications in Seborrhea Capitis.

Herbert Skinner (*British Journal of Dermatology*, February, 1897, p. 70) gives the following formula for cleansing the scalp in this disease: ℞ Sapo. cast. alb., ℥i; alcohol, ℥i; ether methyl., ℥ii; aq., ℥iii. Dissolve the soap in the water, add the spirit, clarify by filtration through kaolin, add the ether. Various ingredients can be added to this, even mercuric chloride. One of the best methods is to use a shampoo liquid with carbonate of ammonium and borax, the alkalinity being less caustic than similar preparations made with potash or soda soaps, while it is equally effective. The following formula may be given: ℞ Ammonii carbonat., ℥ss; boracis, ℥i; aquæ, Oi. Dissolve and add glycerin, ℥iv; "bay rhum," Oi. Quillaia washes, consisting, for example, of two parts of a perfumed spirit or lavender-water and one part of fluid extract of quillaia, are soothing, but they possess doubtful cleansing properties. The following is a new formula, made with saponine, and is an improvement on most of the preparations of this kind: ℞ Saponin, ʒi; tinct. benzoin. simpl., ℥i; aq., ℥ss; glycerini, ℥i; acid. carbolici, ℥i; aq. cologniensis, ad ℥i. Dissolve the saponin in the water and add the other ingredients. An antiseptic and stimulating "hair tonic," containing no alkali, and therefore having no tendency to bleach the hair, may be compounded as follows: ℞ Acid. salicylic., gr. xv; resorcinol, ʒss; tinct. cantharidis, ℥ss; tinct. capsici, ℥i; saponin, ℥i; lanolin, ℥i; aq. rosæ, ad ℥x. Melt the lanolin, dissolve the saponin in the same quantity of water, and incorporate the two. Dissolve the acid and resorcinol in the tinctures and rose-water respectively. It should be brushed into the roots of the hair once daily.

The following "tonic for the hair" is recommended. It has several points to commend it, not the least being the combination of a small percentage of oil with alcohol: ℞ Tinct. cantharidis, ℥xiv; tinct. cinchonæ, ℥ii; tinct. benzoin. simpl., ℥vi; spirit. lavandulæ, ℥iss; ol. ricini, ℥ii; alcohol, ad ℥x. Dissolve the castor oil in the alcohol, mix with the tinctures and spirit, filter through kaolin. For a natural grease for the scalp the following liquid lanolin preparation will be found useful: ℞ Lanolin, ℥ss; saponin, gr. iv; aq., ℥ss; alcohol, ℥i. Dissolve the saponin in the water, stir in with the lanolin which has been previously melted, and when cooling add the spirit. This makes a thick cream which can be poured out of a bottle. It is devoid of stickiness or greasiness.

Counter-Irritation in the Treatment of Herpes.

Theodore Wilkins (*Medical Record*, September 26, 1896) states that he had good results from treating herpes by this method. In nearly all cases of herpes zoster a tender spot may be found higher up over the nerve-trunk, and at this point the counter-irritant is applied in the form usually of flying-blisters or turpentine. The pain is generally speedily relieved, and the eruption dries up much sooner than would be the case in the natural evolution of the lesions.

Treatment of Diseases of the Skin with Preparations of Thyroid Gland.

Zarubin (*Archiv für Dermatologie und Syphilis*, Band xxxvii, Heft 3) concludes from his experience with thyroid that its use is only permissible when the patient can be kept constantly under observation, because of the severe and sometimes dangerous symptoms which it produces. As to its effect upon diseases of the skin, it was useless in three cases of psoriasis and one of sycosis in which the author tried it; indeed, in two of the cases of psoriasis the eruption grew worse during its administration. On account of the untoward effects sometimes attending its administration and the uncertainty of curative results, the author concludes that other remedies are preferable in the treatment of diseases of the skin.

Tuberculides.

Darier, in a communication made to the Société Française de Dermatologie et de Syphiligraphie (*Annales de Dermatologie et de Syphiligraphie*, No. 12, 1896), proposes the name "tuberculides" for the various affections described under the names *acne cachecticorum*, *acne scrofulosorum*, *disseminated* or *grouped folliculitis*, *acnitis*, *folliclis*, *hydrosadenitis destruens vel suppurativa*. A certain relationship seems to exist between these affections and tuberculosis. Very often they are seen in those the subjects of pulmonary phthisis or coexist with other cutaneous tuberculoses, such as lupus or tuberculous gummata. While this relationship is very manifest, its nature is not clear. Bacilli have never been found in the lesions of these eruptions; and while it is likely that they are due to toxines, this is as yet only conjecture. As examples of tuberculides he presents two cases, one regional, of the type of *folliclis*, the other disseminated, under the form of *acne cachecticorum*.

Investigations concerning the Microsporon Furfur.

Spietschka (*Archiv für Dermatologie und Syphilis*, Band xxxvii, Hefte 1 und 2), who has recently studied this fungus, sums up the results of his investigations as follows: Out of twelve different cases which were employed for culture experiments one and the same fungus was obtained. This fungus was differentiated from other pathogenous hyphomycetes and non-pathogenous moulds through its cultural properties. In the very numerous culture experiments which were undertaken with scales from herpes tonsurans, eczema marginatum, favus, pityriasis rosea, and other affections, this fungus was never found. Reinoculation of pure cultures of this fungus upon man was successful in producing a disease of the skin which consisted of brown patches without inflammatory symptoms, associated with active desquamation. In these artificially-produced scales the microsporon furfur, in its typical arrangement, could be demonstrated, and out of the same scales the fungus could be again cultivated. Accordingly, this fungus is to be regarded as the cause of pityriasis versicolor.

Pityriasis Rosea.

Tandler (*Archiv für Dermatologie und Syphilis*, Band xxxvii, Hefte 1 und 2), as the result of a microscopical and bacteriological study of some twenty cases of pityriasis rosea, concludes that this affection is not, as Kaposi asserts, identical with herpes tonsurans maculosus, but is an independent disease. Culture experiments undertaken with scales obtained from the efflorescence failed to show any fungus except a few colonies of staphylococci; and microscopical examination of sections

of excised skin demonstrated the absence of the trichophyton. Histological examination of sections showed the epidermis but little changed; but in the papillary portion of the corium evidences of inflammation were clearly visible. The author does not think there is sufficient ground for belief in the mycotic origin of the affection.

MISCELLANEOUS.

Post-Graduate Courses by the Associates of the Pepper Laboratory of Clinical Medicine.

During May and June (beginning about May 17) the following courses will be given. Each course will last four weeks and occupy two hours daily. The fees will be ($15) fifteen dollars for each course, excepting that in Röntgen skiagraphy, for which the fee is ($25) twenty-five dollars.

Dr. A. E. Taylor, Hematology.
Dr. S. S. Kneass, Bacteriology.
Dr. Joseph Sailer and Dr. J. D. Steele, Pathological Histology.
Dr. W. G. Spiller, Neural Pathology and Anatomy.
Dr. D. L. Edsall, Gastric Analysis.
Dr. S. M. Hamill, Examination of Sputum and Saliva.
Dr. George S. Woodward, Milk Analysis.
Dr. C. L. Leonard, Röntgen Skiagraphy.
Dr. Alfred Stengel, Diagnosis of Cardiac and Pulmonary Disease.

For further information address, Dr. Alfred Stengel, Pepper Laboratory of Clinical Medicine.

National Confederation of State Medical Examining and Licensing Boards.

Officers.—President, William W. Potter, New York; Vice-Presidents, Charles A. L. Reed, Ohio, and J. N. McCormack, Kentucky; Secretary and Treasurer, A. Walter Suiter, Herkimer, N. Y.

Executive Council.—Perry H. Millard, St. Paul, Minn.; Joseph M. Mathews, Louisville, Ky.; William S. Foster, Pittsburg, Pa.; Hugh M. Taylor, Richmond, Va.; James M. Hays, Greensboro, N. C.

The seventh annual meeting of this Confederation will be held in the small banquet hall of the Hotel Walton, at Philadelphia, Monday, May 31, 1897, at ten o'clock, A.M. An interesting programme has been arranged.

The object of the confederation is to consider questions pertaining to State control in medicine and to compare methods in vogue in the several States; the collection and dissemination of information relating to medical education, and to consider propositions that have for their purpose advancement of the standards in the United States. A cordial invitation is extended to all members and ex-members of State medical examining boards, and to physicians, sanitarians, and educators who are friendly to the objects named, to attend the meeting and participate in its proceedings.

BOOK NOTICES.

GENITO-URINARY AND VENEREAL DISEASES. By J. WILLIAM WHITE, M.D., Professor of Clinical Surgery, University of Pennsylvania, etc., and EDWARD MARTIN, M.D., Clinical Professor of Genito-Urinary Diseases, University of Pennsylvania, etc. Philadelphia: J. B. Lippincott Company, 1897.

The authors of this work are so well known to the profession as teachers and writers on genito-urinary and venereal diseases that their book cannot fail to interest those who are engaged in this line of work. Being based primarily on a very extensive observation in private, hospital, and consulting practice, and having a full knowledge of the wants of students and practitioners, the utility of the book in every day work is assured. The joint authorship gives the advantages of a wider experience while retaining the features of the production of a single author. The various portions do not overlap nor is any subject omitted, as is apt to be the case with works of composite authorship. A single-volume work, its scope does not exceed the needs of those for whom it was intended, while, on the other hand, the specialist will find the presentation of the subject sufficiently comprehensive to meet his requirements.

The objects aimed at, as stated in the preface, have been to present clearly and with sufficient detail the generally accepted teachings of the day in regard to the pathology, symptomatology, diagnosis, and treatment of syphilis and genito-urinary disease, while exercising the authors' right of choice in estimating the comparative value of various methods of treatment and giving prominence to those which their experience has led them to prefer. Having in mind the usefulness of the work to physicians, the subjects of symptomatology, diagnosis, and treatment have been given special prominence, and modern methods of examination have been fully dwelt upon, an essential preliminary to accurate diagnosis and rational treatment.

An unusually comprehensive study of the changes in the urine produced by the class of diseases under discussion has been included, and cannot fail to add much to the practical value of the work. Genito-urinary antisepsis and operative technique have been given the consideration their importance demands.

Passing over a number of rarer conditions to the more practical subject of gonorrhea, we find the following: "That the gonococcus is the specific organism of gonorrhea can be considered as absolutely established." This statement was to have been expected, as both of the authors have expressed this belief in various publications and before successive classes for several years. The position held in regard to the abortive treatment of gonorrhea is expressed thus: "It is therefore clear that the abortive treatment should not be attempted except in the very earliest period of a gonorrhea,—that is, when the tickling of the meatus and the drop of clear or slightly clouded discharge, made up of mucus and epithelium, denote that the inflammatory process has not extended deeply." The arguments advanced upon which this rule is based are rational, and together with the authority of the authors should give great weight to this important question. The principles of the abortive treatment of gonorrhea have not, we think, been well understood by the profession in general, and the method has been much abused in consequence. The fact is that very few cases are seen in the stage when this procedure is applicable. The method of treatment by copious urethral irrigations of weak antiseptic solutions is described, as is also the use of the urethroscope. A section is added on the care of urethral instruments, a subject that heretofore has been much neglected.

After a consideration of the evidence, the authors conclude that the etiologic relation of the bacillus described by Ducrey and others with chancroid still remains to be demonstrated. In private practice the most satisfactory treatment of chancroid is said to be that by simple antiseptic dressings, while in hospital patients and those who cannot or will not take the time and trouble to carry out the necessary details, "cauterization is particularly to be commended." The removal of chancroids by the curette or by excision is not sanctioned, as the resulting wound is so apt to become the seat of a larger and more troublesome lesion than that for which the operation was done.

The article on syphilis is especially praiseworthy. It occupies 240 pages of solid matter, and, although condensed as much as possible, is a full and thoughtful presentation of the subject. Dr. White's name will be accepted by the profession as a guarantee of the latest and best thoughts on this subject. To further illustrate the conservative position held by the authors, it is stated that "the clinical evidence as to the microbic nature of the disease is fairly conclusive," a position certainly warranted by the facts and yet not accepting that which is not proven. With the view of limiting the spread of this disease more than has been possible heretofore by any of the methods adopted in European countries, the authors urge the necessity of a more general and more accurate knowledge of the subject, and they believe that supervisory legislation and control of prostitution is desirable. Too much cannot be said in praise of the section

devoted to the treatment of syphilis. Although by no means a new subject, experience proves that the theory upon which it is based is not well understood by a number of the profession. The method advocated in this book has been so successfully employed in a very large experience that the authors have every warrant in being dogmatic. One of the first and most important rules is that "mercury should not be given till the diagnosis is assured by the appearance of secondary symptoms." The few exceptions to this rule are expressly stated and beyond these it should not be departed from. Perhaps the most common mistake made by the profession at large is in supposing that every patient requires the same dose of mercury or of potassium iodide. This point is here given proper emphasis. The hypodermatic method of treatment is not recommended except in certain classes of cases, which are specified. The administration of mercury by vaporization is said to have been practically abandoned. The value of mercurial baths, thermal springs, and heat is recognized. Upward of fifty excellent illustrations of the various syphilitic lesions have been inserted.

The valuable chapters on vesical calculus, hypertrophy of the prostate, etc., merit comment, but the temptation must be passed unheeded on account of lack of space. A chapter on psychopathia sexualis concludes the volume. The subject is discussed only in its practical relation with genito-urinary diseases.

The book contains 1061 pages, nineteen of which are devoted to the index. The paper and press-work are excellent and the binding is attractive.

After a careful examination a conservative estimate places this book easily at the head of works on this subject in the English language.

An American Text-Book of Applied Therapeutics, for the Use of Practitioners and Students. Edited by J. C. Wilson, M.D., Professor of Practice of Medicine and of Clinical Medicine in the Jefferson Medical College, etc. Assisted by Augustus A. Eshner, M.D., Professor of Clinical Medicine in the Philadelphia Polyclinic, etc. Royal 8vo, pp. 1326. Philadelphia: W. B. Saunders, 1896.

The present volume is uniform in style with the "System of Medicine," by American authors, the "System of Obstetrics," and the "American Text-Book of Surgery," and others by the same publishers, which have already taken a high rank among medical works. The editor states in the preface that the book has been written from the stand-point of the practitioner, and that it is designed to make useful to the practising physician the results of the labors of the investigator.

Separate articles upon general therapeutic measures, such as hygiene, climate, quarantine, balneology, and the like, have been omitted designedly, because they do not, in the opinion of the editor, fall within the scope of the undertaking. When one considers that

the volume as it stands contains 1326 pages, it is obvious that if articles on the subjects mentioned had been incorporated a two-volume work would have been unavoidable. Yet we are sorry they have been omitted, for we are confident that the applied therapeutics of the future will have a great deal to do with baths, massage, gymnastics, and electricity. The majority of American practitioners fail to appreciate the great usefulness of these agents; therefore there is the more need for a judicious exposition of them in an American text-book.

There are seventy-eight articles in the book, and these articles have been written by forty-two contributors In one or two instances six or seven articles have been contributed by one man. This may have been unavoidable, but has not been in this instance to the profit of the reader or the reputation of the writer. A number of the articles are of a high order of excellence, notably the article on enteric or typhoid fever by the editor, and that on diseases of the stomach by Dr. Stockton. Dr. Wilson's paper is a valuable contribution to the cold-bath treatment of typhoid fever, with which the name of the author has become inseparably connected. From February 1, 1890, to October 1, 1894, there were treated with cold bathing at the German Hospital of Philadelphia 408 cases of typhoid fever with thirty-two deaths, a mortality of 7.8 per cent.

Dr. Stockton's article is the most scientific and withal the most satisfactory contribution to the subject of stomach diseases which we have seen anywhere.

Dr. Forchheimer's article on diseases of the heart is very satisfactory, in spite of the fact that no mention is made of the Schott methods of treating chronic heart-disease with failing compensation by baths and resistance gymnastics. We are glad he has the courage to say he has failed to obtain satisfactory results from the hypodermic use of digitalin.

Other noteworthy articles are those of Dr. Laveran on malarial fever; Dr. Packard, on internal animal parasites; Dr. Sinkler, on neurasthenia; and Dr. John B. Chapin, on diseases of the mind.

The editor has succeeded admirably in bringing together a most valuable series of articles on applied therapeutics. The book is excellent, and is well worth all it costs.

A Manual of Materia Medica and Pharmacology. By David M. R. Culbreth, Ph.G., M.D., Professor of Botany, Materia Medica, and Pharmacognosy in the Maryland College of Pharmacy. Lea Brothers & Co.

This is one of the latest additions to the literature on the subject of pharmacology. As this study concerns of necessity the pharmacist to a much greater degree than the physician, the arrangement and classification of the work have been chosen accordingly. By far the greater number of drugs requiring notice to-day are derived from the vegetable kingdom, hence the author has adhered to the division into natural orders, genera, and species. The thorough manner in

which this is done may be judged from the fact that following the official name, habitat, and synonyms is a short but explicit statement of the etymology and pronunciation of generic, specific, and all the ordinal names.

The botanical characteristics are fully described, also the commercial appearance of the drug, together with such items of historical interest as seem of sufficient importance. The commercial varieties, the adulterations, and the characteristic features distinguishing a drug from allied ones are fully dealt with and elaborately illustrated by engravings of the crude drug as well as the microscopic section. The chemistry of the constituents of each plant is drawn from the most recent investigations, and a short process appended as to preparation. The pharmacopeial preparations are then discussed, with French and German synonyms; the method of preparing the same, in outline, proportion of active ingredient, menstruum, and dose. To this is added a list of unofficial but important preparations. The medical properties of each plant are dwelt upon superficially, restricting the use of the book to the pharmacist; for this reason therapeutic notes are omitted entirely, and only the general indications mentioned. Finally, the maximum and minimum doses are appended. Scattered all through the work are charts in the form of recapitulations, grouped under the heading first of natural orders, with botanic source, the part official, habitat, constituents, official preparations, medical properties, medicinal uses, and dose, following in the order named; this forms an exceedingly valuable, short, concise, and fairly comprehensive grouping for the student's review.

The small class of organic drugs deriving their origin from the animal kingdom are similarly grouped under classes, genera, and species as to zoölogic source, a recapitulation table following.

Part III is devoted to the consideration of the inorganic drugs derived from the mineral kingdom; Part IV embraces the organic carbon compounds; and Part V finishes the chemical division of this book with a systematic account of the more important non-pharmacopeial organic carbon compounds.

The system adopted in the first part is carried out as fully as possible with regard to the chemicals; preparation, manufacture, properties and uses, doses and adulterations, with tests for purity, symptoms, and antidotes,—if the chemical be a poison,—are all carried out in a similar manner. Part VI contains the organic carbon compounds, and is restricted to the official substances of this class, arranged in a manner convenient for study, while the next chapter mentions every synthetic organic preparation in ordinary use, including derivation, graphic chemical formula, mode of manufacture, and incompatibles, in addition to the systematic description, including therapeutic use, pursued elsewhere in the same work. Finally, a chapter on the use of the microscope constitutes a fitting conclusion, with various useful tables, comprising a list of the Latin abbreviations used in prescription writing.

The special features of this manual are its arrangement; the condensed charts found at intervals through the entire work; the botanical descriptions, with the etymology and pronunciation of

terms. We consider the work thoroughly fitted as a book of reference for the pharmacist, but its scope is far too comprehensive for the practical physician's materia medica, while it is not nearly exhaustive enough for therapeutic use.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY: Being a yearly digest of scientific progress and authoritative opinion in all branches of medicine and surgery, drawn from journals, monographs, and text-books of the leading American and foreign authors and investigators. Under the general editorial charge of GEORGE M. GOULD, M.D. Profusely illustrated. Philadelphia: W. B. Saunders, 1896.

This work has been designed to give physicians in a compact form an annual epitome of the new and progressive medical truths or suggestions published during the months of the preceding year, from July to June inclusive.

There are sixteen sections in charge of the following well-known specialists: Drs. J. M. Baldy, C. H. Burnett, Archibald Church, C. F. Clarke, J. Chalmers Da Costa, W. A. N. Dorland, V. P. Gibney, Homer W. Gibney, Henry A. Griffin, John Guitéras, C. A. Hamann, H. F. Hansell, W. A. Hardaway, T. M. Hardie, C. F. Hiersman, Barton Cooke Hirst, E. Fletcher Ingalls, W. W. Keen, Henry Leffmann, V. H. Noerie, H. J. Patrick, William Pepper, D. Riesman, Louis Starr, Alfred Stengel, G. N. Stewart, Thompson S. Westcott. The various articles have been carefully abstracted, not merely mentioned, and are, moreover, accompanied in many instances by a judicial criticism, which coming from an authoritative source adds considerably to the value of the work. The making of medical literature has become so prolific that it is wellnigh impossible for the busy practitioner to keep abreast of current teaching; it is therefore apparent that a book which comprises within a little more than a thousand pages the gist of a year's progress should be found in every physician's library.

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MEDICAL MAGAZINE.

MAY, 1897.

REMARKS ON A CASE OF ACUTE YELLOW ATROPHY OF THE LIVER, WITH AUTOPSY.[1]

By J. M. Da Costa, M.D., LL.D.,

Philadelphia.

Gentlemen,—The specimens to which I invite your attention this morning have been taken from the body of a young man suffering with jaundice, who died two hours after his admission into the ward. The notes of the case are as follows: P. V., 16 years of age, a cart-driver, born in Italy, was admitted into the Men's Medical Ward of the Pennsylvania Hospital December 15, 1896, and died two hours after admission. As he was unconscious and comatose, the history was obtained from his father. He had lived an irregular life, was intemperate with alcohol and tobacco, and had recently contracted gonorrhœa. For a short time previously he had been attending the Out-Patient Department, suffering with general abdominal pains, vomiting after meals, constipated bowels, and jaundice; the latter symptom having appeared several days before admission into the ward.

Upon admission, he was observed to be intensely jaundiced; he had extreme dyspnea with inspiratory movements of nostrils, and sinking in of suprasternal and clavicular spaces with each respiratory effort. He had also attacks of opisthotonos and convulsive movements of the arms, which afterwards became general and during which his head slightly turned to the right. The pupils were equally dilated; coma was present. The temperature was 102° F.; the pulse 120; the respirations were 58; two hours later, temperature 102° F.;

[1] From a Clinical Lecture delivered at the Pennsylvania Hospital, Philadelphia.

pulse 116; respirations 54, just preceding a fatal attack of convulsions. The urine was passed involuntarily while in the ward and could not be examined; but it may here be stated that, taken from the bladder post mortem, it was found to be dense, reddish, acid in reaction, and contained a trace of albumin, but no sugar. There were no tube-casts, the epithelial elements were intensely bile-stained. Upon evaporation and precipitation, a crystal of tyrosin was recognized.

The patient was well-nourished. The entire surface of the body, including the conjunctiva, was jaundiced. During each convulsive paroxysm the eyes became divergent. The pupils responded equally to light. The respiration was labored and rapid, becoming of the Cheyne-Stokes character before death; the pulse was small, hard, regular. Some râles were heard in the lungs, but accurate observations could not be made of the lungs or the heart on account of stertorous breathing. The liver dulness was diminished, beginning at the lower part of the sixth rib, but the margin could be felt below the ribs. Spleen enlarged and could be felt below the ribs (one centimetre). Abdomen hard, dull, and flat.

The autopsy was made by Dr. F. A. Packard twenty-four hours after death, and he hands us the following report:

"In the anterior mediastinum were two long, symmetrically-shaped bodies, apparently an extension of the thyroid gland.

"The pericardium contained a slight excess of clear fluid. On the posterior surface of the heart were a few spots of ecchymosis beneath the pericardium. Nothing noteworthy in the cavities or valves of the heart. The lungs were voluminous, not collapsed; there were many recent lace-like adhesions at the left upper lobe and some pleuro-pericardial adhesions. The mucous surfaces of the trachea and bronchi were deeply congested. Lungs crepitant in every part; upon section, the cut surfaces showing a peculiar mottling with red, apparently due to interstitial hemorrhage. The mesentery was studded with spots of ecchymosis. In the portal region, under the liver, were several large lymphatic glands. Small intestine apparently normal; appendix vermiformis contained some concretions; mesenteric glands soft and pinkish on section, slightly enlarged but not tuberculous; clay-colored fecal matter in small intestine; stomach exhibited post-mortem stain and slight mottling; pancreas somewhat diminished in size, and rather soft. The suprarenal capsules were normal on section, the right not enlarged, the left one about half the usual size. Ureters and renal vessels normal. The left kidney weighed six and a half ounces, normal in size, capsule rather adherent; parenchyma pouting on section; relation of cortical and pyramidal portions normal; no increase of fibrous tissue; right kidney, weigh-

ing six ounces, presented a similar appearance; bladder slightly injected but otherwise normal.

"Spleen enlarged, weighed eight and a half ounces, measured five and a half by four inches. Surface of spleen on section, rather pinkish, uniform and firm.

"Gall-bladder empty; common duct unobstructed. Liver decidedly smaller than normal, weighed twenty-eight ounces, very flabby, edge thin; bile-stained surface, exhibiting yellow streaks; section cut firmly.

"The brain was decidedly watery; base normal. The right optic thalamus showed a few spots of hemorrhage beneath the ependyma. Nothing else abnormal was noted."

Dr. Packard also reported the results obtained from a bacteriological examination of the principal organ, that "fresh cultures from hepatic parenchyma remained sterile on glycerin-agar and gelatin."

Dr. Packard handed the viscera to Dr. J. Dutton Steele, of the Pepper Laboratory, and this very interesting report was given by him:

"*Liver.*—The section shows a very advanced stage of fatty degeneration. The process apparently commences in the periphery of the acini and spreads inward. In many places the liver substances have entirely disappeared, and it is the exception to find an acinus with a centre comparatively intact. In the areas least affected, some nuclei are irregular and stain poorly, others show much fragmentation of the chromatin, and the nucleus is filled with irregularly-shaped particles that in some cases are still held within the nuclear membrane, in others have escaped and lie in the body of the cell.

"The protoplasm is granular and contains fragments of chromatin and particles of degenerated material. The cells have lost their sharpness of outline. Elsewhere the process is more advanced, the nuclei have entirely disappeared, and the cells are filled with fragments of chromatin and granular *débris*. In other places the cells have run together into a granular mass.

"In some areas no trace of liver substance remains, and its place is taken by a mass of new connective tissue that is in a condition of active proliferation. There is much round-cell infiltration through the section, in the degenerated areas, and also among the few columns of liver cells that are unaffected. These islands of comparatively healthy tissue lie almost without exception in the centre of the acini.

"The connective tissue of the section shows much round-cell infiltration that is especially marked about the smaller branches of the hepatic artery. The appearance suggests that the cause of the inflammatory condition was carried to the part by the arterial circulation. The intima of these vessels are thickened by infiltration and

hyperplasia of the connective tissue. There is no evidence of thrombosis or embolism in the sections examined. There are a few miliary abscesses scattered through the connective tissue between the acini. There are numbers of micrococci around these abscesses among the round cells, and in the pus of the abscess cavity. They occur as well, in smaller numbers, in those areas of liver tissue that are not completely degenerated. These micro-organisms lie singly, not in masses, stain with thionin, and do not decolorize by Gram's method. They are to be distinguished from the fragments of chromatin which are most numerous among the degenerated liver cells, and are irregular in shape, and decolorized by Gram's method.

"Many of the bile-ducts show some degeneration of their epithelial lining. On the contrary, in other places there seems to be a tendency to proliferation which has led to the formation of new ducts in the new fibrous tissue. Between these new ducts are scattered columns of closely-packed epithelial cells. These formations can probably be explained by the opinion held by Ziegler, that such collections are an attempt of the liver cells at regeneration. There is no concentration of the inflammatory infiltration about the bile-ducts as there is about the arterioles. The liver capsule is thickened, and there are several points beneath it where there has been considerable escape of red blood-corpuscles into the tissues.

"A small amount of pigment containing iron can be demonstrated, in the section, by the use of potassium ferrocyanide and sulphuric acid. It lies around the periphery of a few acini among the granular *débris*.

"*Lung*.—The section is from an area of hemorrhagic infiltration that lies immediately beneath the pleura. The air-vesicles are packed with red corpuscles and fibrin. The shape of the cells is well preserved and the process is evidently a recent one. The nuclei of the epithelial cell lining the alveoli refuse the stain. The cells have lost their sharpness of outline and contain granular material. Some of them have been cast off and lie in the alveoli among the blood-corpuscles.

"The capillaries of the septa are distended with blood, and the nuclei of their endothelium stain imperfectly or not at all.

"In the tissue surrounding the infarct the cells of the alveoli show some granular degeneration, and a number of them have been thrown off and lie in the alveoli. There is a considerable amount of round-cell infiltration into the septa of the area of infarction, and also of the tissue immediately surrounding it. There is no thrombosis or embolism of the vessels of the sections examined.

"The pleura is not thickened, but exhibits some inflammatory infiltration. There are no micro-organisms present in the lung.

"*Spleen.*—The spleen shows slight hyperplasia of the lymphoid elements, but no other evidence of disease. No bacteria were found."

Gentlemen, you have just listened to the clinical and pathological history of a most extraordinary case. A young man, 16 years of age, after a debauch, suffers with jaundice, and has vomiting and other symptoms dependent upon gastro-intestinal catarrh. He gets worse, and, as the jaundice deepens, cerebral symptoms appear, among which convulsions are the most prominent. This is followed by coma, with dilated pupils, and he dies in a comatose state. At the autopsy there is evidence of decomposition of the blood; there are hemorrhages in parts of the brain, or rather upon its surface; hemorrhages upon the mesentery; and here is this yellowish, small liver. All this presents the clinical picture of that extremely rare disease, acute yellow atrophy of the liver, which is so rare in this country that some distinguished clinical authorities state that they have never seen a case of it here. I have personally had some experience with it, this making the fifth case occurring in this hospital and out of it that I can now call to mind.

In Europe this affection is not so rare, and, indeed, it occurs so often during pregnancy that it is looked upon as one of the possible consequences attendant upon childbearing. It is generally taught that in women it is more frequent than in men, but upon investigation the disparity between the sexes is not so marked as one would think. It is, as regards age, a disease of young people; the majority of cases happen between the ages of 15 and 30 years.

There are some striking facts connected with this atrophy of the liver which has destruction of the hepatic cells for its characteristic expression. For in this condition, when you examine a section under the microscope, you will find the hepatic cells broken down, degenerated, with their nuclei destroyed. This destruction of the cells of the liver causes the diminution in size of the organ, its yellow color, and also the general jaundice. Most cases of jaundice depend upon some disturbance in bile-discharging functions, and are to be traced usually to some difficulty in excretion; but in acute yellow atrophy of the liver you have the secreting cells affected. The difficulty is non-secretion or non-formation of bile, and not obstruction; as you observe, there was none in this case. Here we had destruction of the liver cells, with accumulation of crude biliary elements in the blood; it is also interesting to note that in the very thorough examination made by Dr. Steele, miliary abscesses in the connective tissue are mentioned. The altered condition of the blood causes hemorrhages, such as you see in the membranes of the brain and in

the mesentery. The cases, as a rule, have albumin in the urine. This was so in this case, and it was also observed in an instance of the affection in a woman whom I saw with Dr. Horatio Wood some years since. In a large number of these cases there is albuminuria, but without there being found marked disease of the kidneys at the autopsy.

This case is most typical in the nervous symptoms, which developed shortly before death. In truth, the nervous symptoms with jaundice are always what causes a presumptive diagnosis of acute yellow atrophy of the liver to be made. What are the nervous symptoms? Repeated convulsions, dilated pupils, coma, and to this you may add delirium and, what we did not have the patient long enough under observation to determine marked tremor. We were unable to study the reflexes, partly for the same reason, and partly on account of the rigidity of the muscles during the time he was under observation.

I call your attention again to the most striking feature of the case,—the concurrence of nervous symptoms with jaundice. You may ask if there are any other peculiar features observed in these patients, phenomena connected with other organs than the brain? Yes, the liver is greatly diminished in size, and it constantly diminishes; the longer the disease lasts the greater, as a rule, the atrophy. In this case the disease did not last so long, and the liver is not so diminished in size as is usual. The alteration in the size of the liver is, I need hardly say, demonstrated in the progress of the malady by physical examination, and especially by percussion.

In making the diagnosis during life, although it is generally the case that there is marked decrease of the area of hepatic dulness, I must direct your attention to the fact that where acute yellow atrophy occurs in persons who have previously been addicted to the use of alcohol to excess and there is a decided increase of the connective tissue in the liver, although there may be great destruction of the liver cells, the organ is not diminished in size. An illustration of this occurred in our wards some years ago. A woman who had most marked yellow atrophy with destruction of the liver cells showed no diminution in the size of the liver because she had been suffering previously with hypertrophic cirrhosis of the organ. So that there are cases of acute yellow atrophy without diminution in size of the liver. From your knowledge of the physiological action and pathologic effects of alcohol, you may be led to infer that alcoholic excess is the most common cause of acute yellow atrophy. I accept the view that it is among the prominent causes, but not the most prominent. The mental condition has a great deal to do with it,

especially strong emotion or fright. I have already said that pregnancy is a common cause. Possibly in this condition there are other causes co-operating, such as anxiety, intemperance, want of care; but certainly a great proportion of the cases occur in women during pregnancy.

Now you may ask, lastly, Is there anything striking besides the jaundice, the nervous phenomena, and the diminution in size of the liver to be observed by which you can recognize the disease? any other symptoms that are characteristic, so that prior to the autopsy you may be sure of the diagnosis? You will often find in the urine leucin and tyrosin crystals. These have also been detected in other secretions and in the blood. In this man the time of observation was too short to permit this line of research being followed during life; but after death, by concentrating the urine, the resident physician, Dr. Scattergood, succeeded in discovering a crystal of tyrosin. I may state that these crystals have been also found under other circumstances; but where they exist in connection with the symptoms already enumerated they are very significant. If they are absent, the evidence is not conclusive against the disease; but if present with the other symptoms,—jaundice, nervous disturbance,—you have striking, if not conclusive, evidence of the presence of acute yellow atrophy of the liver.

Most of the cases of acute yellow atrophy in men begin with nausea and vomiting, symptoms of derangement of the stomach,—in other words, gastro-intestinal catarrh. This was observed in the case under discussion preceding the convulsions. There was also, what is common, dyspnea and enlargement of the spleen. So that you have had thus grouped before you in the record of this case the main symptoms of acute yellow atrophy with nervous symptoms, of which convulsions are the type. Hemorrhages from the bowel, stomach, and lungs also occur at times, and though they did not happen here, the state of the blood determining them was found at the autopsy.

In regard to the diagnosis, there is one point to which I might call your attention which I have not mentioned. It is this: the nearest approach to this condition clinically is seen in phosphorus-poisoning, which occurs among persons working in match-factories or those who have swallowed phosphorus. In such cases also we have acute fatty degeneration of the liver and atrophy. But the vomiting and the gastric symptoms are more marked and the nervous symptoms less marked than in the disease under discussion. Further, leucin and tyrosin, as a rule, are not found in the urine. The symptoms are more abrupt in their appearance and the course more rapid.

Yellow fever also resembles acute yellow atrophy; but there you have the injected eye, intense pain in the back and limbs,—much greater than the muscular and arthritic pains that may be noticed in acute yellow atrophy,—fever with less evidence of local disorder of the liver; and the nervous symptoms are far less prominent than in the affection we have under consideration.

The prognosis is very bad. I have read of a few cases of recovery; I have seen none. The treatment is, unfortunately, merely a symptomatic one.

AN ANALYSIS OF FIVE THOUSAND AND FORTY CASES OF MALARIA, WITH REFERENCE TO THE FREQUENCY OF OCCURRENCE, AND THE INFLUENCE OF SEASONS, AGE, AND SEX UPON THE APPEARANCE OF THE DISEASE.

By J. M. Anders, M.D., LL.D.,

Philadelphia.

(1) The statement has been passing current in some of the text-books of medicine that malarial fever is, on the whole, becoming less and less prevalent in the United States, although it is and has been well known that, while decreasing in frequency in certain quarters, it is increasing in others.

Thus, New England, once a region of country in which the disease was very prevalent, now affords few cases. In the southern portion of the United States, also, the severer forms of malaria at one time prevailed quite extensively, and a marked tendency to progressive decrease in the number of cases has more recently been observed. In foreign lands (England, France, Germany, etc.) the constantly decreasing prevalence and virulence of this disease have been noted by many careful observers.

On the other hand, it must not be forgotten that in some sections of the United States and Europe, from which malaria had for a time disappeared, it has reappeared; moreover, certain localities which had always been non-malarious have become more or less malarious. These phenomena may be explained in great part at least by reference to certain established facts. Thus, it is distinctly known that certain

external conditions (humid soil, temperature, luxuriant vegetation, the presence of oxygen, etc.) are indispensable to plasmodial growth and multiplication, and these conditions are often met with both in marshy districts during the warm season and in tropical and subtropical countries. Again, upturning of the virgin soil or removing the surface of the latter would obviously be followed by the appearance of malaria in localities in which it had been previously unknown. *Per contra*, the natural result of denudation of the virgin soil and its subsequent drainage and cultivation for longer or shorter periods would be to render a region entirely free from the complaint.

As I have said, it is largely a matter of common observation and agreement among authors that malaria has been decreasing in frequency of occurrence. I know of no attempt having been made, however, to show by reliable data either the correctness of this view or the rate of decrease (if it have existed). With a view to clearing up these points, I have collected and analyzed 5040 cases of malaria, gathered from the records of some of the leading hospitals of Philadelphia, as indicated by the following table, which also shows approximately the period of time during which the cases occurred in the various hospitals represented.

Pennsylvania,	from	1853 to 1893	inclusive	2635
Presbyterian,	"	1872 to 1894	"	404
Episcopal,	"	1885 to 1894	"	379
German,	"	1890 to 1894	"	57
Philadelphia,	"	1880 to 1893½	"	1569
				5044

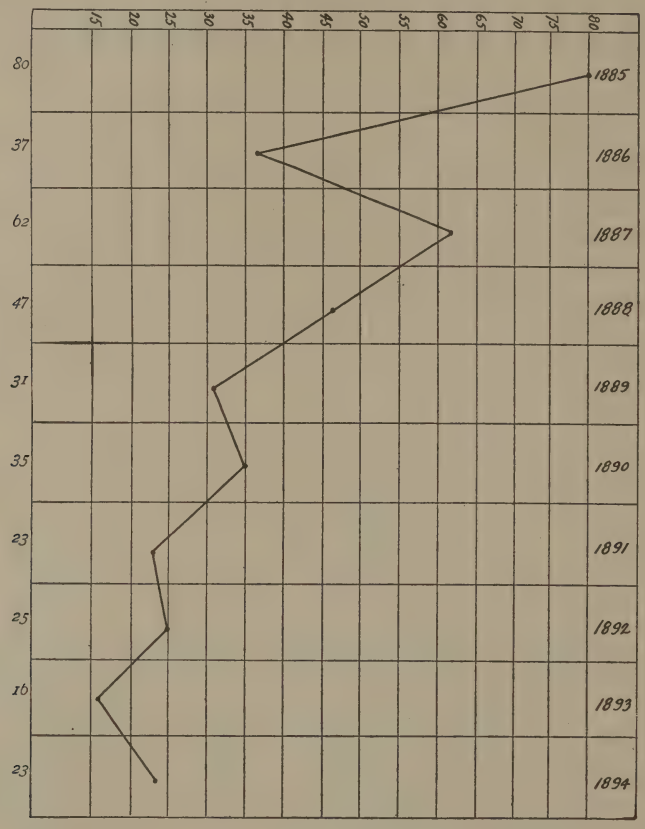
Both the fact that there has been a decline in the number of cases of malaria during the last half century, though more especially during the last twenty-five years, and the extent of that decline are shown by the subjoined tracings, two of which are based upon cases admitted into separate hospitals in Philadelphia, and the last, upon the totality of cases treated in the wards of four leading hospitals of Philadelphia during a short term of years.

To assume that the tracings indicate exactly the lessened prevalence of malaria in general would not be warranted by the facts; but they indicate clearly a progressive local decline in the number of cases. Similar collective investigations into the subject in all the large cities of this and other countries are needed in order to set the question at rest, so far as the totality of the cases is concerned. Doubtless, it would be found that in a comparatively small number of places the disease has become more frequent in recent times. On the other hand, in the vast majority of the malarial districts the

disease would be found to have become less and less prevalent for many years, and somewhat less virulent as well.

(2) *The Influence of the Seasons upon the Prevalence of this Disease.*—As before intimated, climate influences the occurrence of cases of malaria, it being more common in tropical and subtropical coun-

TRACING 1.

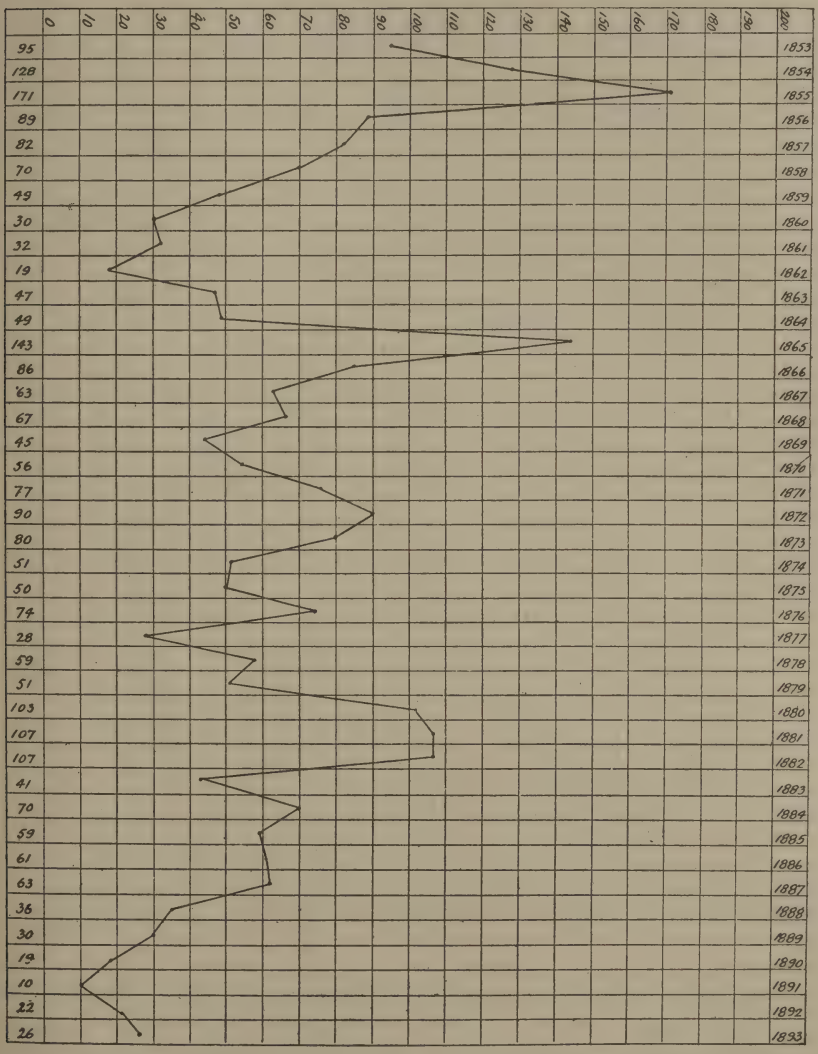


This tracing represents the number of cases admitted into the wards of the Episcopal Hospital of Philadelphia for each year, beginning with 1885, and terminating with 1894, inclusive. The line increases in increments of 5.

tries than in temperate. Moreover, it is more frequent in the latter than in the polar zones. In the latitude of Philadelphia (and this fact is probably true of temperate latitudes in general) most cases are developed in the early autumn, the maximal period corresponding to the month of September. This is shown by the tracing on the

accompanying chart, which is based upon 4841 cases of malaria. The remaining 203 cases of the entire series were eliminated, since all others have been classified according to the date of admission (in

TRACING 2.

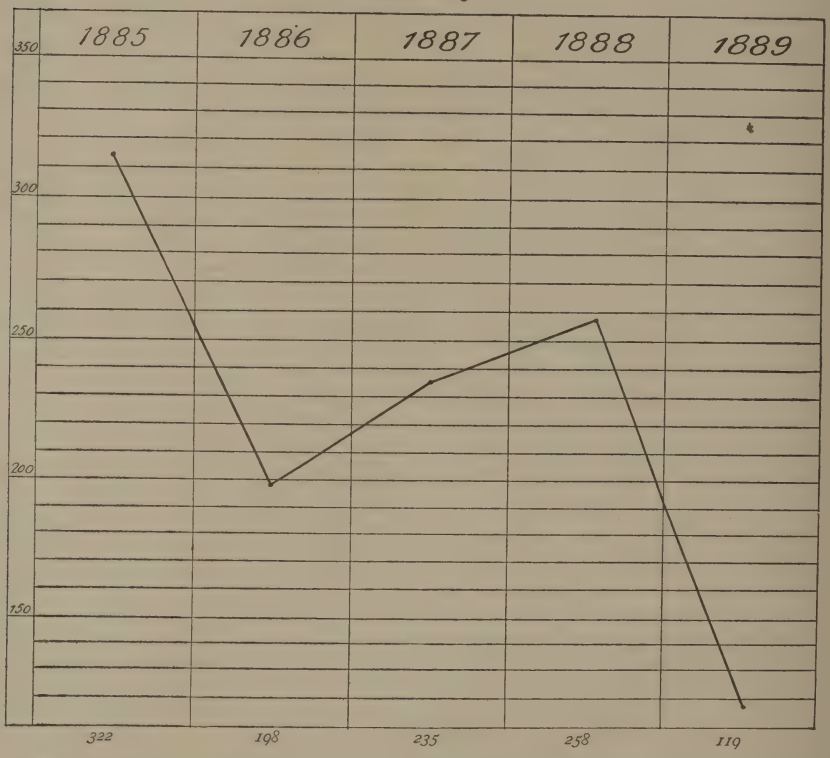


This tracing represents the number of cases of malaria admitted into the Pennsylvania Hospital yearly, during the period extending from 1853 to 1893, inclusive. The line increases in increments of 10.

order to show the effect of seasons), and this was not stated in the hospital records from which they were taken.

Authors who state that malaria is more frequent in spring and autumn than in summer and winter, in temperate regions, probably err. A glance at Tracing 4 will convince the most sceptical that spring, unlike autumn, shows no maximal period. On the other hand, it is seen that the disease is in abeyance not only during the winter, but also, to a considerable extent, during the spring. It is

TRACING 3.



This tracing represents the number of cases admitted into the wards of four leading hospitals of Philadelphia during a period of five years (1885 to 1889 inclusive). The total number of cases for this space of time was 1132. The line increases in increments of 50.

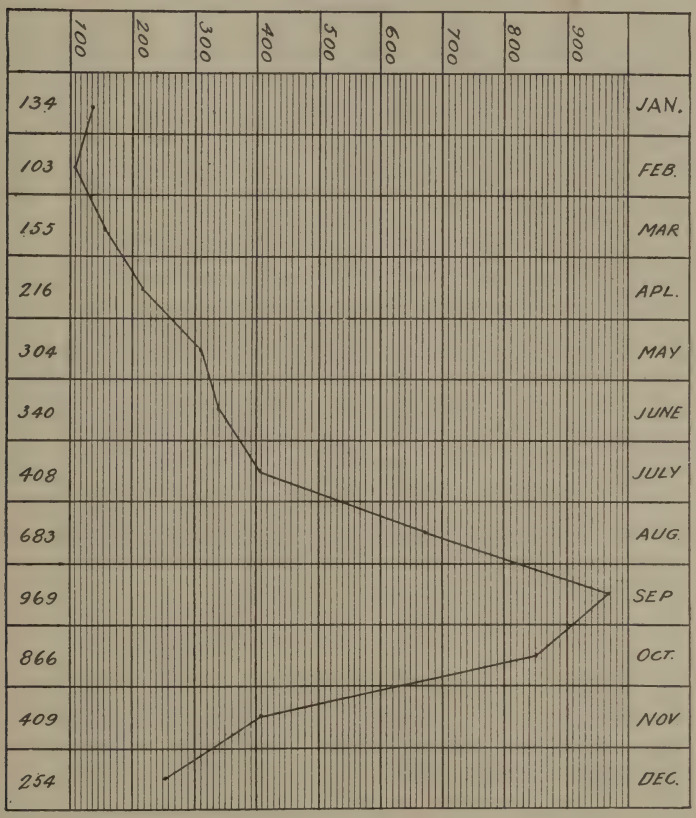
important to note, however, that the cases increase steadily during the latter season, and that this increase continues throughout the summer, or until the maximal period is reached in September. Following the latter month, there may be observed at first a slight decline in the tracing until October is reached, and then a rapid one to the minimum level, which corresponds to the months of January and February.

In the tropics the case seems to be widely different, since two

maximal periods (spring and autumn) and two minimum (summer and winter) obtain. It is generally conceded, however, that autumn claims, even here, the greatest number of cases.

The relation of the appearance of cases of malaria to the various

TRACING 4.



This tracing represents the total number of cases (4841), the number occurring in each month of the year, and the seasonal variations as to frequency of occurrence.

months and seasons of the year is also shown by the following table:

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
134	103	155	216	304	340	408	683	969	866	409	254	4841

From this table it may be seen that about one-fourth of the total number of cases occurred during the first half year; also that more than one-half of all of the cases occurred in three months,—August,

September, and October,—while about one-fifth were met with in the month of September alone.

Thayer and Hewetson have analyzed 616 cases of malarial fever with reference to the influence of seasons upon their occurrence. Of these, 333 were treated in the wards of the Johns Hopkins Hospital, while 283 were treated at the out-patient department. In order to give an accurate idea of the variation of malarial fever with the seasons, these observers were obliged to eliminate a certain proportion of the above cases, thus reducing the total number of cases to 490. A table based upon the latter figures gave the following reliable results:

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
9	8	8	17	21	18	38	66	122	120	38	25	490

It may be observed that these results correspond closely with those of my own observation. There is, however, in the table of Thayer and Hewetson a spring maximum, which occurs in the month of May, though feebly marked. The explanation of this difference in the results obtained may lie in the fact that Baltimore has a somewhat more southerly latitude. (*Vide supra.*)

Thayer and Hewetson also made another table "showing the time at which the patient observed the first symptoms of the affection; this shows several interesting variations from the other tables."

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Not Stated.	Total.
8	2	21	21	44	23	83	103	156	69	16	8	60	614

An inspection of this table shows that "nearly one-half of all the cases originated in the months of August and September; and whereas 137 cases were first admitted to treatment in October, only 68 dated their symptoms from that time."

The fact that the cases were found to be most numerous in the autumn months is in harmony with the previous unanimous opinion of the medical profession, but to show the annual march of this affection, from month to month as has been done by these statistical investigations, cannot fail to be of lively interest. To account for this gradual augmentation of cases beginning with February and ending with September, or the maximal month, and the very rapid decrease after October, no satisfactory explanation has been found. Malaria, however, being a parasitic disease, it is probable that the external conditions (temperature, degree of humidity of soil, etc.) steadily become more favorable during the above-mentioned period of the year. Again, it is quite probable that there is greater opportunity

for infection during the months of greater prevalence of the affection, owing to the fact that human beings are more apt to lead an out-door life, and are hence more exposed to the malarial organism than in winter. That the increased frequency of occurrence is not due to an increase in sickness in general is shown by the well-known fact that the latter occurs in the spring season.

(3) *Sex.*—The appearance of this disease is to a considerable degree influenced by *sex.* Of the total number of cases (5044), there were males, 4250; and females, 704,—a ratio of five and one-half to one in favor of the male sex. But in this connection it cannot be forgotten that the total number of males suffering from the various diseases to which man is liable, admitted into the various hospitals referred to in these figures, is nearly double that of the total number of females, according to my own observations. Even after making due allowance for this influential modifying condition, the proportion would not be less than three males to one female. In the statistics of Thayer and Hewetson, there were, out of 614 patients, 403 males and 121 females. The explanation of this greatly increased occurrence of malaria among men as compared with women is to be found in the fact that men are relatively more often exposed to the malarial poison in consequence of the character of the employment of the former sex.

(4) *Age.*—The occurrence of malaria is also, to a considerable extent, dependent upon age. Thus, if reckoned according to decades, the present statistics are as follows:

For the first decade	152
For the second decade	1061
For the third decade	1420
For the fourth decade	1109
For the fifth decade	622
For the sixth decade	407
For the seventh decade	204
For the eighth decade	67
For the ninth decade	2
Total	5044

It is seen that no age is exempt from this disease, though the largest number of the patients are between 15 and 40 years. It is probable that the period of greatest liability corresponds to the time of life when persons are most apt to be exposed to malarial infection rather than to greater susceptibility on the part of the individual.

CLINICAL HISTORY OF A SERIES OF OPERATIVE PROCEDURES FOR THE CURE OF CICATRICIAL ECTROPIUM FROM ANTRAL DISEASE.[1]

By Charles A. Oliver, A.M., M.D.,

Philadelphia,

One of the Attending Surgeons to the Wills Eye Hospital; one of the Ophthalmic Surgeons to the Philadelphia Hospital, etc.

On September 28, 1896, Dr. Charles J. Hoban, of this city, referred a 14-year-old girl to me at my clinic at the Wills Eye Hospital that I might attempt to remedy a marked deformity of the right lower lid and cheek.

The patient, an intelligent girl, stated that when she was three months old she had an abscess in the right upper jaw, which was treated by Dr. D. Hayes Agnew. This was followed by the formation of a fistulous sinus situated in the cheek just below the eye, through which dead bone and "matter" oozed at irregular intervals until she was 9 years of age. At times there was a discharge into the mouth through the upper jaw.

Examination showed that the entire inferior orbital margin, extending on the nasal side up to the wing of the nose, was lost. The skin and superficial tissues overlying this area were dragged downward and inward by a series of broad subcutaneous cicatricial bands, producing not only an ectropium which exposed the lower tarsal conjunctiva up to the cul-de-sac, but depressed the entire lower lid to such a degree that the eyeball seemed to protrude outward through the palpebral fissure. The skin of the upper cheek, though perfectly smooth and mobile, was bound down into a number of irregularly arranged linear folds, with one point of dense cicatrization which probably represented the position of the previous sinus. The bony wall of the outer margin of the orbit was also depressed and apparently atrophic, producing a well-recognizable asymmetry of the face. The eyeball itself had free motion.

One week later the patient was admitted into the hospital. On October 7, while she was under the anesthetic influence of ether, I freed the skin and subjacent tissues of the cheek from their deep attachments by subcutaneous dissection, the scalpel being introduced

[1] Read before the January, 1897, Meeting of the Section on Ophthalmology of the College of Physicians of Philadelphia.

beneath the skin far out in the temporal region. This done the outer canthus was slit to a distance of about two and a half centimetres and the outer extremity of the ciliary border was bared to a length of about one centimetre. As in the ordinary Dieffenbach operation, the lower lid was then slid up into its new position by two strong deeply-situated sutures placed at the two extremities of the bared ciliary surface, thus forming a new external canthus and shortening the lower lid by one centimetre's length.

Care was taken in making the primary cut in the external canthus to incline its angle up and out as proposed by Szymanowski. Before suturing the outer third of this cut, a shallow triangle was excised just beneath, thus allowing the skin along its borders to be neatly and smoothly approximated by three superficial sutures. The wound was thoroughly cleansed and placed beneath an antiseptic roller-bandage.

The after-treatment was uneventful, and with the exception of a slight loosening and sagging of the outer part of the lower lid necessitating the reformation of a new external canthus in the same manner as previously described, the results were all that could be desired. The skin of the cheek and lower lid were brought very much more forward, the ciliary border of the lower lid was coapted against the eyeball, the outer canthus was intact, and the lids enjoyed free movement.

On January 4, 1897, careful measurement revealed the fact that the lower lid as compared with the fellow was one centimetre long in excess. To remedy this defect, a third procedure which was exactly similar to the two preceding ones made with excellent results.

As it was found possible to further improve the case by bringing the fissure upon a line with that of the left side by the excision of a triangular area in the upper temporal region and the sliding upward of a broad flap of skin including the external canthus, these procedures were successfully performed some weeks later.

Remarks.—The details of the operative procedures pursued to overcome the long-standing conditions in this case have been presented in full, in the hope that their perusal might be of some use in offering to others placed under similar circumstances a method or plan for comparison which has been successful in the present instance.

From this thoroughly practical stand-point the case has been studied, a stand-point that the writer feels sure must be of some interest and value to others as it has been to him.

THE "STRAWBERRY" TONGUE IN SCARLET FEVER.

By M. H. Fussell, M.D.,

Philadelphia,

Chief of Medical Dispensary, University of Pennsylvania.

One of the first cases of illness to which I was called after my graduation was a case of scarlet fever. During the first two or three days the tongue was thickly white-coated, with prominent red papillæ showing through the white fur. I supposed this was the "strawberry" tongue which I as a student had heard so much spoken about. In two or three days more, however, I noticed that the coating had entirely disappeared; that the whole tongue was bright red, and the papillæ red and prominent made this tongue resemble a strawberry much more closely than the white tongue with red papillæ.

I then consulted "Flint on the Practice of Medicine," at that time the only book on practice which I possessed. On page 1054 of that volume, edition of 1881, I found these words:

"The tongue early in the disease is generally coated. While the coating remains, frequently the papillæ projecting through it have the appearance of numerous red points; the surface of the tongue looks as if cayenne pepper or red sand had been sprinkled over it. This is seen in other affections. Another appearance is quite distinctive of scarlet fever. In the progress of the disease, the coating exfoliates, leaving the surface of the tongue clean and reddened; and the papillæ being enlarged, the appearance is strikingly like that of a ripe strawberry. The strawberry-like tongue is a pathognomonic symptom; it is peculiar to this disease. It is often but not uniformly present."

After reading the above remarks, I supposed there could be no possible doubt about what teachers taught and considered the "strawberry" tongue.

Recently, however, several prominent men of the United States have written works upon the practice of medicine, and their opinion differs from that of Flint above quoted.

Whittaker, in his "Theory and Practice of Medicine," p. 208, says, "The condition of the tongue is peculiar in scarlatina. The tongue is coated white and studded with red spots, the protruding swollen papillæ constitute what is known as the strawberry or mulberry tongue. While this condition is not absolutely peculiar to scarlatina, it occurs in it more frequently than in any other affection, and from its obtrusiveness is regarded as a sign of much value."

Tyson, "Practice of Medicine," p. 97, says, "The tongue is red at the edges and tip, furred at the centre, but through the fur stand out the papillæ in distinct points, producing the appearance known as the 'strawberry tongue,' which is regarded as more or less characteristic."

Osler, in the second edition of his "Practice of Medicine," p. 73, says, "The tongue at first is red at the tip and edges, furred in the centre, and through the white fur are often seen the swollen red papillæ, which give the so-called 'strawberry' appearance to the tongue. In a few days the 'fur' desquamates and leaves the surface red and rough, and it is this condition which some writers call the 'strawberry' or, better, 'raspberry' tongue."

Wood and Fitz, in their recent work on "Practice," p. 96, say, "The tongue, though red on the tip and edges, is covered with a whitish fur from which project the red papillæ (strawberry tongue). A few days later desquamation leaves the surface of the tongue red and rough with greatly-enlarged, very dark-red papillæ (raspberry tongue)."

It appears, then, from these quotations that certain authors consider the white-coated tongue with prominent red papillæ both as the strawberry tongue and as a condition characteristic of scarlet fever, and, while no principle of medicine is involved, I have thought it worth while for the sake of accuracy of description to endeavor to discover what writers the world over have considered to be facts on this subject. I have made a fairly exhaustive search through the works on practice published in England, France, Germany, and the United States. Two points would appear for settlement:

(1) What is the condition of the tongue of any which is considered characteristic of scarlet fever?

(2) What is the appearance of the tongue to which the term "strawberry" has been applied, and, incidentally, when and by whom was that term used?

Both of these questions can be considered at once.

I think all physicians who have seen and observed anything of scarlet fever will agree with the following statement:

In the first three or four days of illness from scarlet fever, the tongue is white coated with the papillæ prominent, sticking out through the white fur, as Flint aptly describes, as though the tongue had been sprinkled with red pepper or red sand.

After the fourth day this coating disappears, sometimes gradually, sometimes quickly leaving the tongue a bright, shiny red, with very prominent red papillæ.

I think they will also agree that the first conditions, while com-

mon in scarlet fever, and while the redness of the papillæ is more marked in that disease than in any other, that it does occur in many febrile conditions, but especially where there is irritation of the digestive tract. It therefore is rather a difference in degree than in kind, and cannot be in itself characteristic of scarlet fever.

I think they will agree further that the more or less sudden desquamation of the tongue leaving it bright, red, rough, with prominent papillæ does not occur in any other disease than in scarlet fever, and is therefore characteristic of that disease.

On consideration, I am sure you will all agree that a *white strawberry* with *red* pits is unknown, while the rough red fruit is the common form which would be recognized by any one. Therefore, if the term strawberry is applied at all, it should be to the rough, bright-red tongue with prominent papillæ.

That this has been the acceptation the world over, except in the United States and in one or two cases in England, I think I can prove by a few quotations.

In the early history of scarlet fever, when it was just beginning to be separated from measles, the state of the tongue was not mentioned by any writer whom I have seen; but from 1827 to 1850 it is mentioned by all writers.

A just view of this can be had by consulting the "Dictionnaire de Médecine" in its various editions.

In the edition of 1820, Janin de Saint-Just says, "The whole interior of the mouth is red."

In the edition of 1827, Guersent says, "The tongue sheds its white coat, is reddish-violet, and its papillæ are prominent."

In the edition of 1835, Royer says, "For the first few days the tongue is coated with a white fur; after a few days this coat is shed and the tongue is red and covered with red papillæ."

In the edition of 1844 practically the same statement is made.

In the edition of 1879, Sanné says, "The tongue is characteristic; the first day it remains as it was in the period of invasion, but the redness of the borders and the point are gradually extended. On the third or fourth day the coat completely disappears and the tongue is absolutely clear, of a red carmine color; its papillæ are hypertrophied, and the whole has a certain resemblance to a strawberry."

In 1865, Trousseau says, on p. 79, Vol. I, of his "Medical Clinique," "The condition of the tongue is pathognomonic. It is as characteristic of scarlet fever as the appearance of pustules on the mucous membrane of the mouth is of small-pox. On the first day it is coated white with red point and edges. The redness gradually increases in extent, and on the fourth or fifth day the coating has completely dis-

appeared. The tongue is then of a bright-red color, is swollen, and the prominent papillæ give it the appearance of a strawberry."

The *first* French description that compares this appearance to a strawberry, which we have found, is in the "Bibliothèque du Médecine Praticien," Vol. VI, p. 412, 1847. Every French writer without exception describes the characteristic tongue as it is above, and none speak of the white tongue as being characteristic.

In English. Tweedie, writing in 1842 in the "System of Practical Medicine," says, "When the tongue is clean and moderately red, the elongated, enlarged, and deep scarlet papillæ give it a very characteristic appearance."

Watson, in his "Practice of Medicine," published in 1845, says, "The appearance of the tongue is peculiar; it is at first white with prominent papillæ; the red points multiply; the fur clears away, leaving the tongue red, clean, and raw-looking. It appears like a strawberry. This is the first time I found the word strawberry used in any description."

Frederick T. Roberts, in his article on the tongue in "Quain's Dictionary of Medicine," says, "In scarlatina the papillæ tend to become much enlarged and prominent, so that they project through the fur, and the tongue in many cases presents the so-called strawberry appearance."

Dickinson, in his "Lectures on the Tongue," published in 1888, does not describe strawberry tongue, but one would infer that he thinks it is the coated tongue; but his use of the term strawberry would go to prove that the coated tongue is not characteristic of scarlet fever, for he quotes at least a score of diseases in which the appearance he calls strawberry exists.

In no other English writers consulted have we found any other descriptions than those given above; and the late writers agree perfectly with those of fifty years ago.

Among the Germans:

Strumpell, American edition by Appleton, p. 41, says, "The first coating clears off and then the tongue presents a characteristic appearance. It is diffusely red, covered with little red elevations composed of swollen papillæ (strawberry tongue)." The original edition uses the word raspberry, not strawberry.

Ziemssen's "Handbuch," Vol. II, says, "In the beginning the whole tongue is coated, and on the second or third day the whole coating is shed, as occurs in no other disease."

Eichhorst, "Handbuch der speciellen Pathologie und Therapie," 1884, p. 1156, says, "The whole tongue is coated yellow or white, and the red papillæ show prominently through it. In a few days the

coating disappears, and finally the surface is entirely clean with swollen papillæ, and has more or less the appearance of a strawberry."

In no German authors consulted can any other description be found than that given above.

The American writers alone have differed in their description. Flint, Whittaker, Tyson, Osler, Wood, and Fitz I have quoted.

Dickson, in 1830, p. 723, says, "The tongue throws off its fur and assumes a deep red color, the surface being at first smooth, but soon shining with elevated papillæ."

Dunglison's "Practice" of 1844, p. 526, Vol. II, gives almost the same description as does Flint. Flint, as I have said, gives the red tongue and prominent papillæ as the strawberry tongue.

One early American writer, Eberle, whose work was published in 1831, says, "The tongue is covered with a thick, white fur, through which the enlarged papillæ exhibit their scarlet points, and its edges and extremity are generally red."

Some reader of this volume on the shelves of the library of the College of Physicians has pencilled a side-note which says, Dr. Chapman says this is absolutely diagnostic.

Da Costa says, "The tongue is peculiar, at first white coated with tip and edges red; afterwards the coating clears off, leaving the whole tongue red with prominent papillæ."

Musser, in his work on "Physical Diagnosis," gives the same description.

Taylor, "Practice of Medicine," 1890, p. 61, says, "The tongue is at first coated, but clears off from the tip, leaving a bright-red surface on which red papillæ are prominent, known as the strawberry tongue."

It appears, then, that all writers on medicine in England, France, and Germany agree with the proposition that the tongue of scarlet fever is peculiar or pathognomonic in that it is for the first few days white coated with prominent papillæ, and on the third or fourth day this coating desquamates, leaving the tongue bright red with prominent papillæ. This latter is especially the characteristic appearance, and to it alone is given the name strawberry, or by others raspberry or mulberry.

Most of the writers of the United States agree with this, with the marked exception of Eberle, as early as 1831, and Whittaker, Tyson, Osler, Wood, and Fitz in the last year or two.

Though this last quartet is a formidable one with which to differ, we can but conclude that they have erred for some curious reasons entirely unknown. Certainly not from carelessness or inexperience.

In conclusion, then, it may be stated that the tongue which is characteristic of scarlet fever, and is pathognomonic when it is present, is the bright-red, clean tongue with prominent papillæ. This state of the tongue was described before the term strawberry was applied to it, notably by Gersent, Royer, Tweedie, and Dickson.

The original writers gave the name strawberry tongue to the above condition, and should be applied to it alone.

The term "strawberry" was first applied about 1845, and, as far as I have been able to determine, Watson is the first author who used the word.

THE DISTRIBUTION AND ETIOLOGY OF CARDIAC HYDROTHORAX.[1]

(From the Pepper Laboratory of Clinical Medicine, No. 8.)

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The literature concerning hydrothorax of cardiac disease, considered in relation to its etiology and to the location of the effusion, is small.

In general, the recognized authorities upon diseases of the heart and pleura dispose of the subject by the statement that the occurrence of effusion into the pleural sacs is part of a general dropsical tendency, occurring in the course of cardiac or renal disease, and due to diminished action of the heart and obstruction to the venous circulation. Of course, the fact is recognized that unilateral hydrothorax may be caused by the pressure of morbid growths upon the venous trunks. With a few exceptions, the statement is made that in heart-disease the effusion is always bilateral, though a few observers assert that there is apt to be more fluid on one side than upon the other, and a few writers mention the right side as oftener affected.

Wintrich,[1] in 1868, said that the effusion is almost always bilateral, but is usually greater on the right, and that it is unilateral only when there is an obliteration of one pleural sac. He, however, refers to one case (included in the list) in which there was a large right-sided unilateral effusion, without general edema, and with no lesions except a fatty heart and liver.

[1] Read before the Philadelphia Pathological Society, January 14, 1897.

Fraentzel[2] states that the effusion is only unilateral when there is obliteration of one sac, or some new growth interfering with the pleural circulation.

Wilson Fox[3] (1891) says that it is unusually bilateral, except when caused by the presence of tumors or other mechanical causes, but does not particularize.

Pepper,[4] in the section upon endocarditis in the "American Text-Book of Medicine," states that hydrothorax may occur in chronic valvular disease without general edema, and mentions three cases under observation, in which there is a greater amount of fluid on one side.

Strümpel[5] says, "It [the effusion] is usually bilateral, but is often unilateral, or at least larger on one side than upon the other."

Osler,[6] "It may, however, occur alone or with only slight edema of the feet. In heart affections one pleura is more commonly involved."

Villani[7] and Piazza-Martini[8] state that right unilateral hydrothorax is an early symptom of hepatic cirrhosis, and Villani adds that it often occurs in the early stages of venous congestion from failing compensation.

This subject has been particularly brought to my attention during the past year by several cases, seen in the Philadelphia Hospital, and by several conversations with Dr. Stengel upon the subject. The statement, made by him, that in his opinion effusion into the pleural sacs in the course of heart-disease was more common and larger in amount upon the right side, together with an autopsy that seemed to throw light upon the subject, led to an analysis of a number of autopsies, and of a series of clinical observations, with the hope of determining reliable data upon the following points:

(1) Whether, in the development of hydrothorax in the course of uncomplicated cases of heart-disease, both pleura were equally liable to contain effusion and in the same amount.

(2) If such was not the case, which side was oftenest affected.

(3) Whether the effusion was ever entirely unilateral, and, if so, on which side.

(4) Whether hydrothorax showed a tendency to develop before general dropsy occurred.

In the analysis of the autopsy notes, only those cases were taken in which the myocardium had undergone sufficient hypertrophy to increase the weight of the heart to 400 grammes in the adult male, and to 370 grammes in the adult female, or those in which it had undergone chronic degenerative changes leading to dilatation of the heart chambers. The object of such requirements was to exclude

cases of dilatation, secondary to some acute disease, and also dropsies occurring in the last hours of life, and to limit the data to cases of effusion due solely to uncomplicated cardiac disease.

Further, cases in which concomitant conditions occurred that might cause effusion were excluded. Such are acute pleurisy, aneurism, morbid growths of the pleura or mediastinum, or enlargements of the mediastinal glands.

The following analysis was based upon the notes of 1652 autopsies reported in the "Middlesex Hospital Reports" for the six years ending 1896 and upon those of 775 autopsies made at the Philadelphia Hospital from March, 1893, to September, 1896. The total number of autopsies was 2427.

Total number of cardiac cases in which the requirements were fulfilled	173
Total number of cases of hydrothorax	75
Bilateral equal hydrothorax	22, or 30 per cent.
Bilateral unequal hydrothorax	40, or 53 " "
Unilateral hydrothorax	13, or 17 " "
Bilateral unequal hydrothorax, right greater	31, or 77 " "
Bilateral unequal hydrothorax, left greater	9, or 23 " "
Unilateral hydrothorax, right	10
Unilateral hydrothorax, left	3

It will be seen that in 70 per cent. of the cases of hydrothorax the effusion was unequal. In unequal bilateral effusions the effusion was greater upon the right in thirty-one instances from a total of forty (77 per cent.).

The effusion may be unilateral, and then is more than three times as often found upon the right.

These percentages are too high to be explained by accidental circumstances, as decubitus, and even if a certain amount of the transudation took place during the last hours of life, there is no reason why it should be unequally distributed.

In the thirteen cases of unilateral effusion two cases showed slight edema of the lower extremities and one ascites. In the remaining ten cases no mention is made of the presence or absence of edema. This negative evidence seems to be in favor of its absence in at least a proportion of the cases.

Of the forty cases of unequal bilateral effusion four are recorded as having general anasarca, five as having edema of the lower extremities, and two are reported as free from all dropsy. In the first of the last mentioned the right pleura contained forty ounces and the left four ounces. In the other instance the right pleura contained

twelve ounces and the left two ounces, and were practically unilateral.

Of the twenty-two cases of equal bilateral effusion eight had general anasarca, and one edema of the legs. Nine were entirely free from dropsy. In thirteen cases no mention is made of the condition in this respect. These figures are incomplete owing to lack of positive evidence as to the absence of edema, but it is worthy of remark that the tendency to general anasarca is greatly increased in those cases in which the pleural effusion is equal, and in the unequal cases less than one-sixth of the total are recorded as showing any edema.

In presenting the following series of cases, my thanks are due to Dr. F. A. Packard for the notes of Case I, and to Dr. Alfred Stengel for the opportunity of observing Cases II, III, and IV in his wards in the Philadelphia Hospital during the summer of 1896.

Case I.—P. M., male; white; born in Ireland; aged 56 years; occupation, laborer. He had been a very healthy man up to the spring of 1892, when he first began to suffer from dyspnea on exertion. He was under medical treatment until April, 1893, when he came into the Philadelphia Hospital. On admission he was suffering from severe orthopnea and weak and irregular pulse with physical signs practically the same as recorded below. His right side was tapped soon after admission and a large amount of clear fluid was withdrawn, with great relief. He had no fever, no pain, and no cough. During the following year he remained in the hospital, and in this time fluid was drawn five times from the right pleural sac and once from the left. During all this time he had very slight edema of the feet, but orthopnea was often marked.

September 7, 1894. The following note was made: Orthopnea is frequent, but edema of feet rarely occurs. Examination: No bulging of precordia. Area of impulse not enlarged. Apex-beat in the fifth interspace, one-half inch to left of midclavicular line. There is a thrill in the arteries of the neck. Cardiac dulness extends from the lower border of the third rib above. The left margin is one-half inch outside the midclavicular line. The right margin is the left border of the sternum. There is a high-pitched harsh systolic murmur at the apex that is short in duration, and is well transmitted to the axilla. There is also a short, lower-pitched, presystolic murmur heard best just above the apex. In the aortic area there is a rough, short systolic murmur transmitted into the arteries of the neck, and a very short, rough diastolic murmur as well, transmitted down the sternum. Pulmonary and tricuspid area present no modification of the normal heart-sounds. There is bilateral pleural effusion that reaches on the right to the fifth rib posteriorly; and on the left to the seventh rib

posteriorly. He suffers considerably from orthopnea. Respirations 40. Patient is confined to bed. From this time on the patient grew stronger and was able to be around the wards. His heart's action became much more regular, the amount of urine increased, and the pleural effusion gradually diminished. Upon September 22 the fluid reached the eighth rib posteriorly on the right, and had entirely disappeared on the left.

October 26, 1894. Patient has shown increasing weakness for several days with attacks of cyanosis and dyspnea. The fluid has been rapidly increasing in the right pleural sac in the same period, and now reaches to the spine of the scapula. He was tapped on the next day and seventy-two ounces of clear yellow fluid was withdrawn. This fluid had a specific gravity of 1019, contained a moderate amount of albumin, and, microscopically, many red blood-cells and a very few leucocytes.

October 28. Patient gradually grew weaker and died suddenly to-day. It is to be regretted that no autopsy was obtainable.

The feature of this case is the presence of bilateral hydrothorax, greater upon the right, that increased and diminished as the heart lost or gained strength. The condition of the heart may reasonably be assumed to be aortic and mitral stenosis, failure of the myocardium, and dilatation following hypertrophy. There is no indication of pleurisy, aneurism, or mediastinal tumor, and there are no symptoms pointing to hepatic disturbances. The hydrothorax preceded the appearance of edema.

Case II.—A. M., white; male; native of Italy; aged 31 years; married. Six years ago he was ill for some time with a severe pain in the right side of his chest. A physician applied leeches with relief. Syphilitic infection one year ago. He uses alcohol in moderation. Six months ago he began to suffer from a dry cough accompanied by much pain over the right side of the thorax. He was in a hospital for four months, and stated that while there his chest had been tapped, presumably upon the right. One month before admission his legs, feet, and, later, the scrotum commenced to swell, and a short time before entering the hospital he noticed some enlargement of the abdomen. He suffered severe pain in the right thoracic region during this time, and the slightest exertion excited much dyspnea.

Examination.—Heart, fetal rhythm, and occasionally a faint systolic whiff at the apex, but usually no murmurs can be made out. There is no murmur at the aortic or tricuspid valves. The second sound is accentuated in the aortic area. The heart is much enlarged to the right, and moderately so to the left.

Thorax.—Effusion into the right pleural sac reaching to the third

rib anteriorly. A few moist râles are heard above the effusion anteriorly and posteriorly. The breathing is harsh on the left side, but this pleural sac is free. The spleen and liver are enlarged and there is considerable tenderness over both organs. There is moderate edema of the legs and scrotum and abdominal and thoracic walls. There is a small amount of ascites. A small syringeful of clear yellow fluid was withdrawn from the right side.

For the two weeks following admission his temperature ranged from 97⅗° to 101° F., and after this it gradually fell to normal. During the next month the edema disappeared, the temperature fell to normal, and the patient recovered sufficiently to be out of bed. As the heart gained in strength a low-pitched mitral regurgitant murmur developed.

He gradually became melancholic, but when last heard from his general somatic condition was much improved and he was free from all dropsy. The probabilities are that this patient, six years before, experienced an acute attack of pleurisy on the right side.

The sequence of events was myocarditis from some cause, probably alcoholism, acute dilatation of the heart with right unilateral hydrothorax, preceding general edema. The formation of the effusion was accompanied by enlargement and tenderness of the liver, ascites, and some pain in the right thoracic region. The effusion disappeared as the heart gained strength.

Case III.—C. U., chair-caner, aged twenty-nine years, has not worked at his trade very continuously, and has done much hard manual labor. Has lived in Philadelphia all his life.

Family History.—His father is alive and has suffered much with rheumatism. Mother died of some septic infection and had pus in her knee at time of death. One brother died of consumption.

The patient has had measles in childhood, but never scarlet fever or diphtheria. Has never had rheumatism. He has used alcohol to great excess for three years. Denies any venereal history. About a year ago, following a debauch, he began to suffer from dyspnea and vertigo. In the past year has been in several hospitals for severe attacks of the above symptoms. He recovers after a period of rest, and is comparatively comfortable until physical exertion brings on the trouble anew.

Admitted to Philadelphia Hospital July 20, 1896. Examination July 29. The patient is anemic and his color suggests nephritis. The veins of the neck are enlarged but do not pulsate. Pupils are equal. There is no tracheal tugging.

The apex-beat is seen in the fifth interspace, one centimetre outside of the midclavicular line. It is somewhat diffused. Another

impulse is seen in the fourth interspace in the midclavicular line to the left of the sternum, also somewhat diffuse. Palpation shows a faint systolic thrill over the apex-beat. Percussion shows the heart to be pushed somewhat to the left. The left border by auscultatory percussion is 3.2 centimetres to the left of the midclavicular line at the left of the fifth rib. The upper border corresponds to the upper edge of the third rib, the lower border to the lower edge of the sixth rib, the right to the midsternal line. There is a faint systolic mur mur at the apex which is rough and galloping and suggests the possibility of its being presystolic in time. At the tricuspid area the first sound is soft and murmurous, and is of a distinctly different quality from that heard at the apex. No distinct murmur can, however, be made out. There is no murmur at the aortic area. The second sound in the pulmonic area is accentuated. The right side of the thorax has decidedly less movement than the left. There is dulness on the right side up to the angle of the scapula posteriorly, and to the upper border of the fourth rib anteriorly. The line of dulness changes when the patient changes his position. In this area the breath-sounds are suppressed, and the vocal resonance and fremitus are absent. Along the upper border of dulness faint egophony can be heard. The aorta shows no abnormal pulsation and there is no area of dulness suggesting an aneurism.

The breath-sounds are somewhat harsh in both lungs, especially marked above the effusion on the right. A few dry râles are heard over both sides.

Liver dulness commences at sixth rib and extends downward 3.5 centimetres in the midclavicular line and 4.5 centimetres in the midaxillary line. Posteriorly it commences at the ninth rib and extends downward nine centimetres. It is therefore distinctly reduced in size. The area of splenic dulness is somewhat larger than normal.

The patient gained strength and the dyspnea gradually left him. As his heart's action became stronger the effusion lessened, and within two weeks from the time of admission had entirely disappeared.

The patient grew strong enough to be about the wards, and remained in the same condition until August 20, 1896, when he dropped dead while walking across the ward. No autopsy.

In this case the sequence of events was probably as follows: Alcoholic myocarditis; acute dilatation particularly affecting the right chambers; right-sided unilateral hydrothorax diminishing in amount as compensatory hypertrophy occurred. There was absence of all signs of mediastinal tumor and hepatic enlargement, of tenderness, and of ascites. There was but very slight subcutaneous edema.

Case IV.—M. S., German; miller; widower; 53 years of age. The patient has no friends and speaks an unintelligible dialect and no history can be obtained.

He was admitted to the Philadelphia Hospital on June 22, 1896. He was suffering then with great dyspnea, cyanosis, but there was no edema of the extremities. The heart was irregular and rapid. There was an impulse in the anterior axillary line on the left. The heart was so irregular that no murmur could be made out. There was dulness over the whole of the right side with suppressed heart-sounds, and absence of vocal resonance and fremitus. The liver extended to the level of the umbilicus in the midclavicular line and there was some tenderness over it. The urine showed no albumin. Its specific gravity was 1025. The right pleural sac was tapped and sixty-three ounces of a clear fluid was obtained, the specific gravity of which was 1019. The patient was much relieved, and the heart returned almost to its normal position. The apex was then in the fifth interspace in the left midclavicular line. He improved slowly and was fairly comfortable for several weeks, though the heart's action continued somewhat irregular, and the sounds indicated weakness of the heart-muscle.

The right pleural sac began to fill up slowly soon after the aspiration, and upon July 11 the right sac again contained considerable fluid. The heart is still very weak and a very faint, rough, systolic murmur can sometimes be heard at the apex. The liver still reaches to the level of the umbilicus. Diaphragmatic movement is absent on the right side.

Urine, specific gravity, 1018; no albumin; forty ounces in twenty-four hours. The amount of urine varied from this date to time of death from twenty-five to thirty ounces in the twenty-four hours. It never contained albumin.

The patient after the last note was made began to experience attacks of dyspnea and cyanosis, and died in such an attack July 20, 1896. Autopsy twenty hours after death. The body of a fairly well-preserved man. There is slight edema of legs, ankles, and scrotum.

The abdominal cavity contains about 280 cubic centimetres of clear, serous fluid. The diaphragm is pushed down so that on the right the upper border of the liver is three centimetres above the costal margin in the midclavicular line and nine centimetres in the median line.

The heart is pushed downward. The apex is in the midclavicular line under the seventh rib. The right auricle is much distended and projects six centimetres to the right of the median line at the level of the root of the right lung.

The dilated right auricle presses directly on the root of the lung. The bronchus shows no evidence of compression. Veins of right pleura not congested. The vena cava shares in the dilatation of the right auricle. The thoracic duct is not dilated.

The heart is much dilated by liquid blood. The wall of the left auricle measures four millimetres in thickness and that of the right auricle the same. Left ventricular wall is twenty-six millimetres in thickness, right ventricle six millimetres. Weight of heart 640 grammes. The myocardium is pale with several areas of increased connective tissue scattered through it. The muscle is friable and soft, but there is no marked fatty change. The endocardium of the lower third of the left ventricle is covered by marantic coagula which, in places, are firmly adherent to the endocardium, and are entangled between the fibres of the columnæ carneæ. There are a few spots of fibrous thickening upon the aortic valves. The free edge of the posterior leaflet of the mitral is thickened by fibrous change. The tip of the papillary muscle of the left ventricle is much thickened by increase of fibrous tissue. The right pleural sac contains 1600 cubic centimetres of clear, blood-stained fluid. The visceral layer of the pleura is somewhat thickened, but there is no sign of an inflammatory process and the fluid contains no fibrin. The left pleura contains 300 cubic centimetres of clear, blood-stained fluid.

The left lung is intensely congested and edematous, especially at the bases posteriorly, but it is everywhere crepitant. The right lung is small and compressed, but shows no pathological condition except congestion and edema.

Spleen is small and measures nine by seven by three centimetres. The capsule is thickened and wrinkled. The organ is cyanotic and indurated. In the lower portion of the organ is a small, pyramidally-shaped scar that extends deeply into the organ. The adrenals are normal.

The kidneys are very small. The capsule strips with great difficulty. The surface of the cortex shows many cysts and is scarred. The cortex is very much contracted. On section the surface of the section is so much distorted by fibrous change that the pyramids and cortex can scarcely be distinguished from each other. Left kidney weighs ninety grammes. Right kidney weighs 110 grammes.

The pelves of the kidneys and ureters of both sides show small, herpetic vesicles, filled with clear fluid. These vesicles measure one millimetre in diameter and are not easily broken. The ureters and bladder are otherwise normal. The pancreas is indurated. The liver is slightly smaller than normal. There are a few adhesions between the liver and the diaphragm evidently due to an old perihepatitis.

On section the central veins are engorged. The consistency of the liver tissue is not increased, and it is friable and distinctly fatty in spots. The glands of the mediastinum are not enlarged or diseased. Nothing else of pathological interest is found in the body.

In this case there was arterio-capillary sclerosis, chronic fibrous myocarditis, hypertrophy, and dilatation, especially affecting the right auricle. There was hydrothorax greater on the right side, increasing as the heart lost strength. There was no fever, pain, or signs of inflammation in the pleura or abdomen. Slight ascites and edema existed, consistent with commencing tendency to general dropsy, but the thoracic effusion preceded the appearance of the subcutaneous edema.

Microscopic examination of the heart-muscle and kidneys confirmed the diganosis of fibrous myocarditis and interstitial nephritis.

Case V.—(Reported by Wintrich.) A small, fat, thick-necked man, a waiter by occupation, and aged 36 years, was admitted to a hospital in Berlin. He was cyanosed and almost pulseless. The veins of his neck were over-filled, the extremities were mottled by blue spots, and the respirations were stertorous. He died in forty-eight hours without a thorough examination, and before a history could be obtained.

Autopsy.—There was no edema of any portion of the body, except, perhaps, that the subcutaneous fat showed an excessive amount of moisture. The right pleura contained a very great amount of clear, yellow fluid. The pleura showed no sign of inflammation whatever. There was no neoplastic growth anywhere in the body. There was no fluid in the left pleural sac nor in any of the other pleural cavities. The right lung was compressed but otherwise showed no pathological condition. The left lung was normal.

The heart is not greatly infiltrated with fat, but the muscle is weak, soft, and dull in color. The blood in the heart-cavities was dark, cherry-red, and fluid, and of the same character as that found in the rest of the vascular system. The valves are normal. The vena cava descendens is very much engorged and dilated.

There are no pathological changes in the abdomen. The liver is fatty. The spleen is enlarged, hard, and firm. Otherwise there is nothing abnormal found in the body. Wintrich remarks that the above is a very instructive case of unilateral hydrothorax, for which no cause can be found other than chronic myocarditis from alcoholism. No explanation for the conditions found can be given except a dilated right auricle. There was no inflammatory change about the liver or ascites. There was practically no subcutaneous edema.

Case VI.—(Reported by Guitéras.[9]) Male, aged 27 years;

occupation, sailor. He was always in good health except an attack of acute articular rheumatism at 22 years of age, followed by no apparent heart-lesion. Soon after this he contracted syphilis and came into the hospital twice for the secondary manifestations. Three years before admission he began to suffer from dizziness, dyspnea, and palpitation. During the present year he was twice under treatment for edema and other cardiac symptoms.

Examination.—Emaciation and slight jaundice. The face and extremities are congested and the veins of the neck are swollen and pulsating. An ophthalmoscopic examination shows pulsations of the retinal veins. There is marked epigastric pulsation, and a diffuse apex-beat in the fourth and fifth interspace in the midclavicular line. There is a blowing mitral systolic murmur transmitted to the axilla and to the right towards the ensiform (tricuspid systolic murmur?). The second sound is reduplicated in the aortic area.

Autopsy.—Lungs edematous. No adhesions in the pleural sac. There is considerable passive effusion in the right pleural cavity.

Pericardium is closely adherent to the entire surface of the heart.

The left ventricle is somewhat dilated. Its walls are of normal thickness. There is some thickening of the auricular walls. The mitral valve is stenosed so as to form a button-hole orifice. The right ventricle is slightly hypertrophied. The right auricle is dilated and its wall is thinned. The cusps of the tricuspid valve were thickened and shortened. There was some stenosis of the aortic valves. The myocardium is flabby and evidently fatty. The heart weighs 570 grammes. The liver and kidneys are cyanotic and fatty.

The sequence of events was probably rheumatic valvulitis, compensatory hypertrophy, gradual degeneration of the myocardium, and dilatation, especially affecting the right auricle. Considerable right unilateral hydrothorax with but slight general edema. No signs of inflammatory change in the pleura or serosa hepatica. No enlargement nor tenderness of the liver.

Piazza-Martini reports several cases of right unilateral hydrothorax occurring in atrophic cirrhosis of the liver, and offers as an explanation for the condition the fact that the esophageal veins are engorged by the attempt to establish a collateral circulation between the obstructed portal system and the general venous system. These engorged veins press upon the vena azygos and interfere with the return of blood from the right pleura, and hence the effusion. His theory was upheld by Lizzato[10] and Cardanelli.[11]

Villani also stated that he had observed the presence of a considerable serous exudate in the right thoracic cavity as a constant

symptom of atrophic hepatic cirrhosis. He reports nine cases in which this occurred. The effusion occurred without fever, stabbing pain on respiration, or painful cough, and he therefore excluded acute pleurisy as a causal factor. He opposes Piazza-Martini's theory of the origin of the fluid, and gives as an explanation that the pressure upon the serous covering of the liver in the first stages of interstitial inflammation, as well as its participation in the inflammatory process, causes a low grade inflammation of this coat and some effusion into the peritoneal cavity. The morbid process thus spreads through the diaphragm by continuity to the pleura. There also low grade inflammatory changes are set up and an exudate is formed in the pleural sac.

Villani goes still further, and has observed the presence of right-sided hydrothorax in cardiac disease, uncomplicated by interstitial change in the liver. He gives as an explanation the fact that in failing compensation of the heart the liver is the first structure to feel the venous obstruction, the peritoneum hepaticum is stretched and inflamed, and the hydrothorax developed in the sequence given.

Villani's theory, while plausible in certain cases, is not comprehensive. Thus it does not explain how in some instances the effusion is entirely left-sided. It is hard to conceive how an effusion, occurring in the manner that he states, could reach the dimensions seen in some of the cases in the clinical list without some fibrinous exudate and subjective symptoms. In Case II such symptoms were present. There was enlargement of the liver, tenderness on pressure in the hepatic region, considerable pain over the right side of the thorax, and some fever.

In the autopsy upon Case IV considerable perihepatitis and some ascites were found, but the fluid was entirely free from fibrin, and the specific gravity and percentage of albumin were too low to be consistent with an inflammatory origin for the effusion.

Cases I and III, however, showed no ascites, and there was no pain or fever. Here, then, are two cases in which Villani's theory is insufficient to account for the unilateral effusion that was present.

The amount of effusion in Cases I and III evidently depended upon the condition of the heart. It increased when the heart weakened, and decreased as the heart gained strength. In Case I it almost disappeared from the right pleura, and was entirely gone from the left when the patient recovered sufficiently to be about the ward. In Case III the right-sided effusion disappeared as the heart grew stronger.

In Case IV the effusion increased as the heart failed, and at the autopsy the liver, though cyanotic, was not markedly so, and was not

enlarged. In none of these cases was there hepatic tenderness while the fluid was increasing.

If, however, a low grade inflammation was once established in the diaphragmatic pleura on the right, it is quite conceivable that a venous engorgement of this part would tend to prevent its resolution, and thus the effusion might be maintained. But if the effusion was due to an inflammatory process secondary to similar changes in the liver, it is hard to see how the fluid could increase without an increase in the enlargement and tenderness of the liver, a condition entirely absent in all of my cases. It is worthy of note in this connection that in the sixty cases of right unequal hydrothorax there were but six cases of abdominal effusion without general dropsy, a very small proportion if the primary cause of the excess of fluid upon the right side was due to an inflammatory process, commencing in the serosa hepatica.

In 1838, King[12] reported five cases of mitral stenosis in which the left bronchus was compressed to a considerable degree by a dilated left auricle. In two of these cases there was unilateral left-sided hydrothorax. In one of the remaining cases there was obliteration of both sacs, and in a fourth an acute pleurisy. In the fifth case the bronchus was but slightly constricted and the pleural sacs were empty.

Friedrich[13] also reports a case of mitral stenosis with a similar condition, but does not mention the condition of the pleura. When it is considered that in the cases of right-sided hydrothorax given there was evidence of dilatation of the right heart; and in King's cases half showed left-sided effusion, the idea strongly suggests itself that pressure exerted by a dilated heart may be an important factor in the causation of unequal pleural effusion. In King's cases pressure was exerted directly upon the root of the left lung. The right auricle is in closer relation with the root of the right lung than the left auricle is to that of the left. In Case IV the dilated right auricle was found to press directly upon the vessels and bronchi of the right lung, although the bronchus itself showed no evidences of compression.

The relations of the roots of the lung are thus given by Quain:[14] "The root of the right lung lies behind the superior vena cava and part of the right auricle, and below the azygos vein which arches over it to enter the superior cava. That of the left lung passes below the arch of the aorta and in front of the descending aorta."—that is, the right auricle lies in front and in intimate relation with the root of the right lung, and the left auricle below and also in intimate relation with that of the left lung. I have confirmed this statement by observation upon a series of cases in the autopsy-room.

The venous circulation of the pleural sacs is in the largest part accomplished by the intercostal and bronchial veins, while the thymic, pericardial, and internal mammary play a very unimportant part in it. The root of each lung is composed of the bronchus, the large blood-vessels, the lymphatics of the lungs, and the bronchial vessels (Quain). The lymphatics of the lung form a close net-work under the visceral layer of the pleura, and unite in large trunks that pass out to the bronchial glands along the root of the lung.

Pressure upon the roots of the lungs, if not sufficient to compress the larger vessels, might, however, seriously interfere with the circulation of the lymphatic vessels and bronchial veins. The disturbance in the bronchial circulation would probably not be marked because of their anastomosis with the pulmonary circulation. Pressure upon the root of the right lung would also compress the vena azygos which passes directly behind it. This vessel receives all the intercostal veins from the right side, the lower ones directly and the three upper through the right superior intercostal veins. It also receives as tributary the vena azygos minor, which receives the intercostal veins from the lower three or four intercostal spaces on the left. The left intercostal veins from the fourth to the seventh or eighth interspaces, inclusive, empty into the left upper azygos vein, which in turn opens into the vena azygos major directly or in common with the vena azygos minor. This left upper azygos vein communicates above with the superior intercostal vein of the left side, which opens into the left innominate vein and receives the intercostals of the three upper spaces. The left bronchial vein empties into the vena azygos minor, the right into the vena azygos.

Pressure, then, upon the vena azygos, such as could be occasioned by a dilated right auricle, would interfere with the return circulation of the right pleural sac, and to some extent with that of the left, but the communication of the left upper azygos vein with the left innominate would relieve to some extent the obstruction upon the left side.

To formulate the results of pressure exerted by a dilated right auricle and vena cava upon the root of the lung:

(1) Obstruction to the venous circulation of the right pleural sac through the vena azygos and its tributaries, and to a less extent through the bronchial veins.

(2) Obstruction to the lymphatic vessels supplying the visceral layer of the pleura.

Pressure of a dilated left auricle would cause—

(1) Obstruction to the circulation of the bronchial veins and lymphatics of the left lung.

(2) Obstruction in the left superior intercostal vein and vena

azygos minor, which lie behind this auricle in the posterior mediastinum.

In sixteen of the thirty-five cases of right unequal bilateral hydrothorax dilatation of the right auricle is especially mentioned. And in two of the five cases of unequal left hydrothorax the left is stated to be particularly dilated.

The early occurrence of hydrothorax in cardiac disease and its tendency to affect the right side earlier than the left is indicated in the five cases of the clinical series. The great inequality of the effusion in favor of the right side is shown in the series of autopsies. The possibility of pressure by a dilated right auricle upon the root of the right lung and consequent interference with the return circulation of the pleural sacs with the production of a passive effusion has also been shown. When these facts are coupled with the tendency of the right auricle to be the chamber most liable to be dilated in failing compensation of the heart, the connection seems to be more than a coincidence and appears to be a reasonable explanation.

In a similar manner the cases of left unilateral effusion, and unequal bilateral effusion greater upon the left, may be explained by interference with the return circulation of the left pleura by pressure upon the root of the left lung and the left superior intercostal vein, a condition which occurred in two of King's cases.

While it has been repeatedly proven that temporary obstruction to the venous circulation is insufficient to cause edema in the part affected, yet all observers unite in the statement that long-continued obstruction will cause local edema, whatever be their theory concerning the pathology of dropsy. Lazarus-Barlow[15] and Starling[16] unite in the opinion that an impoverished condition of the blood plasma, and consequent malnutrition of the tissues, are most important factors in the causation of dropsy.

The equal bilateral pleural effusions, then, may be explained by the supposition that the malnutrition of the body tissues in general was considerable before the dilatation of the auricles was sufficient to exert localized pressure, and the tendency to general dropsy occurred as soon as the failing heart offered the slightest obstruction to the venous circulation, affecting the pleura as the other serous cavities.

Conclusions.—During the failure of the heart-muscle in uncomplicated cases of chronic heart-disease, passive effusion into the pleural sacs may occur before there is any tendency to dropsy elsewhere in the body.

In the great majority of the list of cases of hydrothorax of cardiac origin the effusion was bilateral, but it was usually (70 per cent.)

unequal in distribution, and three-fourths (77 per cent.) of the unequal effusions were greater upon the right side.

The hydrothorax may be entirely unilateral, and five-sixths of these cases were right-sided.

The explanation is furnished by the fact that when either auricle is dilated it obstructs, by its pressure, the venous and lymphatic circulation of the pleura of its own side, and thus causes effusion into its sac. This usually occurs before the interference with the systemic venous circulation is sufficient to cause general dropsy. The position of the right auricle in relation to the other chambers of the heart renders it most liable to dilatation, and hence effusions occur oftener upon the right in unilateral cases, and in bilateral is greater upon this side.

Equal bilateral hydrothorax is explained by a cachectic condition of the blood and tissues, and in the cases analyzed was very much oftener associated with general dropsy than the unequal form.

The presence of low grade inflammation in the pleura that has been excited by an old pleuritis or by a similar condition in the serous covering of the liver, caused by the stretching subsequent to its enlargement from congestion, may, and probably does, account for a certain proportion of cases, but in the great majority of instances this explanation is insufficient.

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[12] *King:* Guy's Hospital Reports, 1838.
[13] *Friedrich:* Ziemssen's Handbuch der speciale Pathologie, Band VIII, Heft 2, p. 236.
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ALUMNI NOTES.

Medical Alumni who were killed during Service in the Rebellion.

The committee appointed by the Alumni Society to collect the names of those graduates of the Medical Department of the University of Pennsylvania who died in the service of the United States during the War of the Rebellion, have secured four additional names, which have been added to those reported last year. It is earnestly hoped that any one who can supply additional information on this subject will confer at once with one of the committee or with the Secretary of the Society. Only a nucleus has been secured with which to commence a history of those noble men who fell in their country's service. It is intended, when the list is complete, that their names shall be placed upon a tablet in the projected Alumni Hall. Roland G. Curtin, M.D., 22 South Eighteenth Street; H. Y. Evans, M.D., 1631 Green Street; R. A. Cleemann, M.D., 2135 Spruce Street.

The following is a correct list as far as completed, with date of graduation and death:

James T. Calhoun, 1859—1866; Edward F. Corson, died 1864; Abraham Cox, 1823—1864; John T. Crawford, 1847—1861; Jacob H. Gotwold, 1861; James Potter Gregg, 1858; William P. Grier, 1858—1866; George W. Hammond, 1851—1863; Joseph Hopkinson, 1838—1865; James J. McGee, died 1864; David J. Minas, 1854; Samuel H. Peltz, died 1865; Charles H. Pyle, died 1862; J. K. Sherk, 1857—1864; Richard F. Simpson, 1840—1861; Thomas Somers, 1856; Albert Owen Stillé, 1851—1862; Benjamin Tappan, 1836—1866; C. S. Widdifield, 1860—1862.

College Men in the Medical Department.

It is an interesting fact that of the 920 students in the Medical School of the University some 230 hold academic degrees of some sort, while at least one-half the number have attended college courses for a year or two before entering the Medical School. When the requirements for admission are raised in a couple of years to the same standard that is now required for the College, the percentage of college men will, of course, be increased. In the Law School the per-

centage of college graduates is much larger, there being 130 holders of degrees out of 360 students, or over one-third of the total number.

Necrology.

Edward Drinker Cope, Ph.D., the distinguished naturalist and professor of Zoology and Comparative Anatomy in the University of Pennsylvania, died on April 12, 1897, in Philadelphia. He had been connected with the University since 1889, during which time he added greatly to his reputation in original research, and placed himself among its foremost students of natural history in the world.

Professor Cope was born in Philadelphia on July 28, 1840. He was educated at the Westtown Academy and at the University of Pennsylvania, and then studied comparative anatomy in the Academy of Sciences, this city, in the Smithsonian Institution, during 1859, and in Europe from 1863 to 1864. In 1864 he became professor of Natural Sciences in Haverford College, but resigned in 1867 on account of failing health. Later he became paleontologist to the United States Geographical Survey. His work in this connection resulted in his discovery of nearly 1000 new species of extinct and as many recent vertebrata. For many years Professor Cope was secretary and curator of the Academy of Natural Sciences, this city, and chief of the Department of Organic Material of the Permanent Exhibition in this city.

He was also a member of numerous scientific societies in the United States and Europe, and in 1879 he received the Bigsby gold medal from the Royal Geological Society of Great Britain. In 1872 he was elected a member of the National Academy of Sciences, and in 1884 was vice-president of the Section on Biology of the American Association for the Advancement of Science. In 1889 he became professor of Deology and Paleontology in the School of Biology in the University, a position he held up to the time of his death.

Professor Cope has contributed about one hundred papers to the American Philosophical Society, Academy of Natural Sciences, the National Museum, and the publication, the *American Naturalist.*

Aside from this, he has written upward of 350 papers, which form a systematic record of the development of paleontology in the United States. His researches have secured for him valuable marks of distinction from several European institutions of learning.

Dr. John C. Terrell died in Philadelphia, March 28, 1897. Dr. Terrell was born in Person County, N. C., and received his school education in the South. He graduated from the Medical Department of the University of Pennsylvania in 1840, after which he

returned to North Carolina, where he practised his profession successfully for thirty years. During the Civil War he paid repeated visits to Richmond to afford medical treatment to wounded soldiers in the hospitals.

Dr. William B. Henderson died in Steelton, Pa., February 22, 1897. He was born in Hummelstown, and was graduated from the University of Pennsylvania. He was a surgeon in the Civil War.

Operative Interference in Typhoidal Perforation.

Armstrong gives the following results of the operation as it has been performed: Early operations twenty-three, with four recoveries. He believes there have been other unsuccessful operations performed, but thinks all the recoveries have been reported. He believes, if the evidence is that the perforation is in the colon or is likely to remain localized, better wait for abscess-formation. If, on the other hand, signs show the perforation to have taken place in the general abdominal cavity that laparotomy offers the only hope of recovery. This should not be performed until the patient has recovered from the collapse. Perforations occurring during convalescence offer greater prospects of recovery.—*British Medical Journal*, December 5, 1896.

Glycosuria in Febrile Conditions.

Poll (*Fortschritte der Medicin*, July, 1896) has investigated the occurrence of glycosuria in febrile conditions where sugar has been taken in the diet. The observations were made in sixteen cases of febrile disease, including pneumonia, typhoid, quinsy, rheumatism, and scarlet fever. The temperature varied from 99.6° to 105° F. Glucose was administered in doses of 100 to 150 grains, and the urine carefully watched afterwards. It was found that glycosuria occurred in fourteen out of the sixteen cases within a short time of the administration, and lasted from two to thirteen hours. It seems that lobar pneumonia is specially liable to show this diet glycosuria. Poll considers that the special proneness to this form of glycosuria in febrile disease is due to the failure of storage of glycogen in the liver, as shown by experiments on animals, and hence the excretion by the kidneys, as sugar from the blood.

EDITORIAL.

SOME RECENT SUGGESTIONS IN THE TREATMENT OF EPILEPSY.

Since the introduction of potassium bromide in the treatment of epilepsy, by Sir Charles Locock, in 1857, no agent has been found so generally useful. It is admitted, however, that the bromide treatment leaves much to be desired, and therefore new remedies are brought forward continually with the hope that they may prove more efficacious in controlling the paroxysms, and at the same time less active in producing untoward symptoms. It has been clearly shown that certain bromide preparations have a less deleterious effect on general nutrition than others, though the same salts may be, to some extent, less powerful; this is particularly true of strontium bromide, which is far less apt to induce acne, mental depression, and gastric disturbance than the corresponding salts of potassium. According to Wood, both ammonium and strontium are stimulants to the circulation, while potassium is a powerful depressant. The strontium salt differs from the ammonium salt in being directly less active as a bromide, but in having a more happy effect on the alimentary canal. As the cost of the strontium salt has been lately considerably reduced, its employment in epilepsy will doubtless become more general. Within the last few years three drugs have been introduced in the treatment of epilepsy, which, though of little value when administered independently, are very useful adjuvants, and when combined with a bromide often lessen materially the amount of the latter required to control the seizures. These three remedies are antipyrin, the fluid extract of *solanum Carolinense*, and opium. Antipyrin, in doses of ten or fifteen grains a day, can be given with ammonium or strontium bromide for several months without ill effects. In some instances, however, its prolonged use excites circulatory disturbances, such as coldness of the extremities, cyanosis, and copious perspiration. *Solanum Carolinense*, or horse-nettle, was first recommended by Napier. Potts (*Therapeutic Gazette*, December 10, 1895) draws the following conclusions from the use of this drug in seventeen cases of epilepsy: That the drug has a decided influence for good upon the epileptic paroxysm; that this influence is probably not so great or so sure as that obtained by the use of antipyrin and the bromide salts, or even of the mixed

bromides; that in those cases in which it is of service it relieves the paroxysms without causing unpleasant symptoms, such as are sometimes caused by the use of large doses of the bromides; that the dose ordinarily recommended (ten to fifteen drops of fluid extract) is too small, and that as much as a teaspoonful or more four times daily is often needed to secure results.

In the *Neurologische Centralblatt* for November 7, 1893, Flechsig announced that he had obtained brilliant results in epilepsy by prefacing the bromide treatment with the administration of opium in ascending doses. His method consists in exhibiting the extract of opium for six weeks, in doses rapidly increased from a quarter of a grain to five grains three times a day, when the drug is stopped, and half a drachm of potassium bromide, three times a day, is substituted; these large doses are continued for one month, and then gradually diminished until about thirty grains per day are being taken. This treatment has been quite thoroughly tested, and most observers agree that it is of decided advantage in certain cases.

Collins, who employed it in fifty cases, has drawn the following conclusions: The plan suggested by Flechsig is not a specific in the treatment of epilepsy; in almost every case in which this plan of treatment has been tried there has been a cessation of the fits for a greater or lesser time; a relapse generally occurs in a period varying from a few weeks to a few months; the frequency of the fits after the exhibition of the opium is, for the first year at least, lessened more than one-half; the attacks occurring after the relapse are much less severe in character than those that patient has been accustomed to having; this plan of treatment is particularly valuable in ancient and intractable cases; in recent cases of idiopathic epilepsy it cannot be recommended; it is an important adjuvant to the bromide plan as ordinarily employed; the opium acts symptomatically and merely prepares the way for and enhances the activity of the bromides and other therapeutic measures; this treatment permits the use of any other substances known to have a beneficial action in epilepsy.

Sulphonal and trional are unquestionably of value, and occasionally succeed where the bromides fail. While the danger of chronic poisoning precludes their prolonged use, they may be prescribed with advantage when a temporary change of treatment is for any reason desirable.

In a certain proportion of cases the exciting cause of the paroxysms seems to be the absorption of toxic substances from the intestine, resulting from indigestion and constipation. This factor of auto-intoxication has been carefully studied by Herter and Smith (*New York Medical Journal*, August and September, 1892), who

studied 238 specimens of urine from thirty-one epileptics. In 72 per cent. of the observations there was an unmistakable evidence of intestinal putrefaction, as indicated by the presence of ethereal sulphates in the urine in large quantities, just before the occurrence of the paroxysm. Such cases are remarkably benefited by regulation of diet, the use of alkaline laxatives, and a course of intestinal antiseptics.

As regards the diet, recent investigations confirm the belief that most epileptics do best on a diet that is chiefly vegetable. Merson (*Dietetic and Hygienic Gazette*, March, 1892) has recorded the results of a series of observations on twenty-four chronic epileptics. Twelve of the patients were put on nitrogenous and the other twelve on farinaceous food, and this arrangement was continued for four weeks; when the diet was reversed, and observations continued for another period of four weeks. Out of the twenty-four cases there was, in fourteen, a decided decrease in the number of fits during the period of farinaceous diet; the average number of seizures for the farinaceous period was 10.7 as compared with 28.3 for the nitrogenous period. The same results were obtained by Short (*British Medical Journal*, May 18, 1895) in the treatment of fifty epileptic women who had previously been carefully observed for twelve months in order to ascertain the average number of fits.

The hope that surgical intervention might prove of great value in epilepsy has not been realized, and a more careful study of the cases subjected to operation has proved that this method of treatment has but a very limited field of usefulness. The two classes of cases in which operations have been performed are those resulting from reflex irritation and those dependent upon some focal brain lesion. It has been shown, however, that reflex epilepsy is very rare, the proportion of cases resulting from some peripheral irritation not exceeding one or two in a thousand; and that, moreover, there are very few cases recorded in which the removal of a supposed local irritation has succeeded in permanently checking the convulsions. In the few cases of epilepsy resulting from brain injury the epileptic habit has been, as a rule, so firmly established that an operation rarely cures, and only seldom diminishes the frequency of the attacks.

Mason (*Medical News*, March 21, 1896) has tabulated seventy cases of trephining for epilepsy, and of this number three died from the operation, three were cured, and four were improved. If trephining and ablation of morbid tissue were reserved for cases in which the injury was received only a few months prior to the development of the epilepsy, the proportion of cures would doubtless be larger than is indicated in Mason's statistics.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

Treatment of Exophthalmic Goitre by Administration of Thymus Gland.

Owen (*Gazette hebdomadaire de Médecine et de Chirurgie*, January 3, 1897). A patient was affected for twenty years by Graves's disease. All the ordinary remedies had been tried with no effect. In May, 1893, he was given half an ounce of thymus gland a day for three months. The symptoms soon disappeared and the man was able to work. The treatment was discontinued in January, 1894, and in three months the tremor, tachycardia, and some of the goitre had reappeared. He was then again given half an ounce of thymus three times a week, with the result of disappearance of the symptoms in two months. The thymus disagreed with the digestion, and was discontinued on several other occasions; its discontinuance was always accompanied by a reappearance of the symptoms, its use followed by amelioration. A second case is reported with excellent results from the use of the glycerin extract. He quotes some other authors who have reported cases resembling these, among whom are Wood and Cohen, of Philadelphia.

Case of Ascending Myelitis Complicating Measles.

Ellison (*Lancet*, October 17, 1896) reports the following case of interest: During an epidemic of extremely severe measles, a boy of 14 years was attacked and went through with what was a very severe attack of measles. On the fourth day of the disease there was retention of urine. On the fifth day there was complete paraplegia with absolute anesthesia from his toes up. At 2 P.M. there was a temperature of 105° F. The temperature rapidly rose to 107° F., the paralysis and anesthesia continued to advance, and the patient died on the seventh day with a temperature of 109.2° F.

A Study of Chlorosis.

Simon (*American Journal of the Medical Sciences*, April, 1897), in a study of thirty-one cases of chlorosis, comes to the following conclusions: (1) An anatomical basis of chlorosis has not been satisfactorily determined; (2) a perversion of the appetite—excessive consumption of starches and sugars—is a common symptom of chlorosis; (3) the development of chlorosis is due to an insufficient consumption of animal proteids; (4) chlorosis is far more common than is generally supposed and

occurs in both sexes and at almost all ages; (5) the diagnosis of chlorosis should be based altogether upon an examination of the blood; (6) the term chlorosis should be discarded and "simple anemia" substituted; (7) iron is not a specific in the treatment of chlorosis; (8) in the treatment of the disease attention should be primarily directed to the diet; (9) in cases in which iron fails, satisfactory results may be obtained, without medication, from a suitable diet, in which animal proteids, bone-marrow, and dark beer are the principal factors; (10) the beneficial effects of bone-marrow are not due to the amount of iron which it contains. He believes that while splanchnoptosis is frequently observed in cases of chlorosis, it cannot be regarded as the causative factor; nor can atony of the stomach, or constipation and increased intestinal putrefaction. Most of the other theories as to its causation are discarded as being inadequate. As noted, he is led to the conclusion that in the great majority of cases chlorosis is essentially a disease of malnutrition, the result very frequently of abnormal feeding in early childhood. He believes that the chlorotic patient is capable of not only digesting a normal amount of proteid matter, but also of assimilating the products of digestion.

Meat-Poisoning.

Mann (*Medical Chronicle*, July, 1896). Apart from added poison and parasitic disease, meat may become poisonous in three ways: (*a*) from the presence of disease, at the time of slaughter, in the animal from which the meat is derived; (*b*) from micro-organisms which attack or develop in meat subsequent to slaughter; (*c*) from the presence of toxalbumoses or of ptomaines. The symptoms produced by poisonous meat may be grouped in two divisions,—(1) those due to a true infection; (2) those due to simple poisoning. In the first division the train of symptoms runs the usual course of an infective disease, as witnessed by the occurrence of symptoms suggesting typhoid fever in 600 people who had eaten of meat from an animal killed while moribund. In the second division the symptoms usually resemble those due to acute gastro-enteritis,—violent vomiting and purging, rapid loss of strength, with extreme depression, cramps in the calves of the legs, and general coldness of the surface, with subnormal temperature; sometimes the temperature is elevated. In these cases the average prodromal period is shorter than in those of Class 1, and the acute stage of the illness does not exceed a few days at the longest. The post-mortem appearances comprise those of gastro-enteritis. Some toxines produce special symptoms, as, for instance, an atropine-like base, found in decomposing meat,—sausage, ham, and certain kinds of sea fish (sturgeon),—which is said to produce symptoms resembling atropine-poisoning. The toxine or toxines (probably mixed products) contained in the same meat may produce different symptoms in different people. This is probably due to an irregular distribution of the toxine (and in some instances of the bacteria) in the bulk of the meat. This also accounts for the varying intensity in the symptoms of different individuals who have eaten from the same meat-supply, and also for the negative results which so frequently attend the bacteriological and chemical investigations of those portions of the meat which remain after an outbreak of meat poisoning. These negative results are probably also in part due to the fugitive or unstable nature of the poison,—ptomaines or toxalbumoses. As many of these chemically-formed toxic products resist the prolonged action of heat, no amount of cooking can be relied upon to render harmless infected meat. In several instances it has been observed that if the flesh of an animal, in a certain stage of septic disease at the time it was slaughtered, be eaten shortly afterwards, it may not produce any ill effects; but if it be kept for some

days it becomes toxic, and will produce the usual symptom of meat-poisoning in those who eat it. The flesh of healthy animals may become poisonous by keeping, either from contamination with micro-organisms which are pathogenic to man, or from the production of toxines in the meat owing to the action of non-pathogenic putrefactive micro organisms. Meat may be infected with bacteria after it has been cooked, as well as when it is in the raw state. Although, in a general sense, we understand the processes that take place in healthy meat which is undergoing decomposition, we are far from being able to satisfactorily explain all the attendant circumstances. Bad or putrid meat is proverbially dangerous as a food, and yet meat that is in an obvious state of decomposition is frequently eaten with impunity. Statistics afford discordant results with regard to the kinds of meats which most frequently give rise to outbreaks of poisoning, pig meat, potted meat, cow and ox meat being more commonly the offending varieties. The percentage of deaths is difficult to estimate, as the number of persons attacked is frequently not stated, the fatal cases only being recorded. Outbreaks with a mortality of 1.6, 4.3, 30, 40, and even 60 per cent. have been recorded. As regards preventive measures to be taken in relation to meat-poisoning, too much emphasis cannot be laid on the necessity for stringent supervision of the lower class butcher. There should also be a close inspection of all kinds of prepared and preserved meats. Cleanliness should be observed in all places where meat is prepared or stored. The cooking must be thorough. This will destroy all micro-organisms, but not necessarily a toxine, which would retain its virulence in spite of having been subjected to the temperature to which the meat would be raised. Rigid supervision, therefore, of our source of meat-supply and cleanliness in its preparation for consumption is recovery.

Idiopathic Osteopsathyrosis (Fragilitas Ossium) in Infancy and Childhood.

Griffith (*American Journal of the Medical Sciences*, April, 1897) reports a case of idiopathic osteopsathyrosis occurring in a child, aged 2 years and 10 months, and gives a survey of similar cases which he had been enabled to collect from the literature. The patient, without hereditary predisposition, and born after an apparently normal labor, exhibited nothing unusual until the second day after his birth, when both femora were found fractured. Union was complete in three weeks. At the age of 3 months the right humerus and right femur were broken. At the age of 7½ months he fractured his right femur. Seven months later he again broke his left thigh. Union took place, but two weeks after the dressings had been removed the bone was fractured again. From time to time other fractures of his thighs, forearms, and ribs occurred. It is estimated that in all he has seventeen or eighteen fractures. His general health and nutrition were good. There were few, if any, evidences of possible rickets.

Osteopsathyrosis may be symptomatic of other affections, or it may be idiopathic,—that is, not associated with any discoverable cause. The symptomatic form depends upon various conditions, such as rickets, syphilis, atrophy of the bone, osteomyelitis, malignant new growths, cysts, localized necrosis, etc. The influence of heredity is very marked in the idiopathic form. There is a tendency to a transmission not only through males but to males, and a further tendency for the affection to begin in early life. The force necessary to produce the fracture is nearly always slight and sometimes remarkably so. The influence of other diseases is problematical. The pathology of the affection is imperfectly understood. An interesting feature is that union of the broken bones is remarkably prompt. The

symptoms consist, of course, in the occurrence of numerous fractures from insignificant causes. In the diagnosis we must first determine the absence of other conditions to which fragility may be secondary. The prognosis is very unfavorable. The treatment, as both the cause and nature are but little known, is largely experimental. It consists in the administration of alteratives of various sorts, the maintenance of good general health, and the protection of the limbs against fracture in the expectation that the fragility may be outgrown.

Osteo-Arthropathy and its Relationships.

Walton (*St. Thomas's Hospital Reports*, Vol. xxiv, 1897) gives a very excellent dissertation on osteo-arthropathy and its relations, with abstracts of the sixty-five cases reported to the present time. But the merest details can be referred to here. Three groups are to be considered: (1) Typical osteo-arthropathy with bony changes and a peculiar form of clubbed fingers; (2) cases in which only the peculiar-clubbed fingers have been noted; (3) a mixed group, including all those cases in which the enlargement of the extremities appears to have been primary, as well as others which are of uncertain nature, whether from insufficient details or for any other cause. A typical case would present the following features: (1) A history of previous thoracic disease: (2) a peculiar form of clubbing of the ends of the fingers and toes; (3) symmetrical bony enlargements mainly affecting the articular ends of the long bones; (4) effusions and other changes in neighboring joints, also roughly symmetrical; (5) slight overgrowth of adjacent soft parts: (6) other less constant or less frequently recorded features, dermal, neuro-muscular, vascular, urinary, etc. The changes occurring in the ends of the fingers are great enlargement of the terminal phalanges or soft parts covering them; hyperextension of the last joint, and changes in the nails,—large and wide, reaching to the lateral border of the finger; strongly curved in both directions, curving over the ends of the finger; the root long and mobile, the body striated or furrowed in one or both directions; color, bright pink, peach colored, or more or less cyanotic; consistence diminished, so that it readily splits or breaks; growth abnormally rapid. In other words, exaggeration of the conditions met with in lesser degree in the ordinary clubbed fingers of phthisis, emphysema, or heart-disease. The clubbing is usually most marked in the thumb and middle finger; in the foot the great toe is usually disproportionately affected. The bony changes have a characteristic distribution, involving the phalanges, the heads of the metacarpal and metatarsal bones, the lower three or four inches of the radius and ulna, and the same parts of the tibia and fibula. At times the bones about the elbow and knee-joints are affected: less frequently the outer third of the clavicle, the spine and acromion process of the scapula, some of the ribs, the iliac crests, and the vertebræ. Histologically the bony conditions vary somewhat, but the main changes are referred to the periosteum and subjacent bone. Clinically the bone lesions are characterized by comparative absence of pain and tenderness. The onset may be insidious or rapid, and there may be a tendency to paroxysmal enlargements with stationary intervals. There is no tendency to softening or suppuration. The articular lesions are of a similar sluggish character, and take the form of painless effusions into the joints or of synovial and periarticular thickenings with no tendency to form pus, and very little to soften and break down. The joints most frequently affected are the wrists, ankles, and knees; less frequently those of the hands and feet, elbows, and shoulders. The muscles are usually somewhat wasted and feeble. The skin is usually not hypertrophied, but is rather thin and stretched over the enlarged parts, its folds

not being exaggerated as in acromegaly. Perspiration is often excessive from the affected extremities. Pigmentation, xeroderma, ichthyosis, and urticaria have been noted. The nervous system has sometimes shown profound changes of varying nature, and in many cases abnormalities of the ductless glands, blood, urine, and genitalia have been observed. The disease is to be distinguished from the ordinary clubbing of heart- and lung-disease, chronic rheumatism of the small joints, rheumatoid arthritis, pseudo-rheumatism, gout, tubercular arthritis, and osteitis, syphilitic bone- and joint-disease, myxedema, elephantiasis, hypertrophies of syringomyelia, erythromelalgia, congenital hypertrophies, and acromegaly which probably bears the closest resemblance to it. More males are affected than females, and the vast majority of cases are preceded by some kind of lung-disease. Pus or muco-pus is present in nearly all the cases. Is it essential? Tuberculosis and syphilis are not necessary antecedents. The vast majority of cases have followed either empyema or bronchiectasis, and most of the remainder have come on in the course of phthisis, —all three conditions in which retained secretions are present in the body. It is therefore probable that osteo-arthropathy (and also clubbing of the fingers) are partly due to humoral causes. Are they likely to be intrinsic or extrinsic? Probably the latter. The diversity of the associated respiratory conditions points to one of two conclusions. Either osteo-arthropathy is a complication of many different diseases, or it is not a separate disease at all, but a group of symptoms dependent upon a common mechanism which may be excited by a number of recognized diseases. The absence of any definite course favors the latter hypothesis, and it is probable that the common factor is of the nature of a toxine or ferment, but it does not follow that it is always identical in origin. There is nothing improbable in the hypothesis that it may be sometimes tuberculous, sometimes syphilitic, sometimes the product of yet other causes.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

The Absorption of Iron from the Alimentary Canal.

Cervello (*Archivio italian de Biologie*, xxv, 3) published some years ago a series of experiments tending to show that ferric chloride was transformed in the alimentary canal first into ferrous chloride, which combined with albumin to form a soluble product by which the iron was absorbed. He has of late extended these experiments and confirmed their results. He finds that when ferric chloride is added to egg-albumin solution it forms a clot which soon dissolves, and that the solution by degrees ceases to give the ferric reactions in the following order: sulphocyanide, ferricyanide, ferrocyanide, tannin, and ammonium sulphide: the last two reactions have not entirely disappeared at the end of twelve hours. The process may be hastened by gentle heat or by rendering the fluid alkaline. A more stable compound of iron with albumin may be produced by substituting morsels of frog, washed and freed from blood, for the egg-white; the process is slower, but the iron is held more tenaciously. The substance thus produced is strictly comparable to

Schmiedeberg and Marfori's ferratin, which is thus unnecessary, since the inorganic salts of iron are converted into it in the intestine. The objection which has been raised that the iron does not really go into solution, but is precipitated in an insoluble form, is negatived by the fact that in the filtered liquid obtained by adding ferric chloride to egg albumin the iron reactions can be readily obtained after treatment with strong acids. The author has strengthened his views by experiments on mammals. Thus, a half gramme of ferric chloride solution was given to a dog, followed by a test meal. Seven hours later the dog was killed, and the alimentary canal removed. In the gastric contents, which were strongly acid, a very faint and slow ferric reaction could be obtained, but no test for iron reacted with the acid duodenal or alkaline intestinal contents. On decomposing these, however, with strong acids, abundant evidence of the presence of iron was afforded, as was also the case with the fluid obtained by filtration when similarly treated. It must thus be admitted that medicinal salts of iron form a soluble compound in the albumin in the intestine. There is, therefore, no object in the administration of its organic compounds.

Value of Formalin as a Disinfectant.

Walter (*Zeitschrift für Hygiene*, Vol. xxi, 1896) draws the following conclusions for his experiments with formalin as a disinfectant:

(1) Formalin in the strength of 1 : 10,000 arrests the growth of the germs of anthrax, cholera, typhoid fever, diphtheria, and staphylococcus pyogenes aureus.

(2) In the gaseous form it arrests growth, even when greatly diluted.

(3) In 1-per-cent. solutions it kills pure cultures of pathogenic germs in an hour. In diluted alcoholic solutions the effect is more intense.

(4) In 3-per-cent. solutions, especially with the addition of alcohol, the hands may be freed from all germs. More extended investigations are necessary to show the degree to which the skin is affected.

(5) By spraying artificially infected matter with formalin solution, and afterwards enclosing it in air-tight vessels, such matter may be sterilized.

(6) By means of formalin (or, in other words, formaldehyde), leather articles, uniforms, etc., may be thoroughly disinfected in large quantities, and without in any way injuring these articles. Twenty-four hours' exposure are requisite for such disinfection. The possibility of disinfecting rooms may be considered as demonstrated by other experts.

(7) Feces are almost instantly deodorized by a 1-per-cent. solution, and are disinfected (germ free) in ten minutes by a 10-per-cent. solution.

(8) Formalin acts as well as a caustic.

(9) It is an excellent preservative.

Phenocoll Hydrochloride in Acute Articular Rheumatism.

Dr. Max Olny, of Halle (*New York Medical Journal*, February 20, 1897), reports the results obtained in a series of experiments. The remedy was used in sixteen cases in doses of fifteen grains three times a day, and was prompt in its action. In three cases it failed; in all the others, some of which had been treated without success with sodium salicylate, it acted promptly. In cases that were not of long standing the pain diminished after eight scruples had been taken, and complete recovery after six drachms. The average time of treatment was thirty days. In recurring cases, on an average six drachms were required and the treatment lasted for thirty-three days.

Better results were, therefore, obtained with phenocoll hydrochloride than with salicylate of sodium. The author advises continuing the use of phenocoll for a few days after the pains have subsided, giving fifteen grains every second day, morning and evening. If after seven or eight days no relapse has occurred, a definitive cure may be recorded.

The influence of the remedy on the temperature is reported as quite variable. The temperature becomes normal as soon as the affection of the joints has disappeared. Considerable perspiration was observed with weak patient, but no other by-effects, such as cyanosis, collapse, etc., were noticed.

Analgene.

Mongorvo (*Bulletin de l'Académie de Médecine de Paris*, November 10, 1896) reports his experience with this new coal-tar product. He used the drug exclusively in children, and reports fifty-nine cases, thirty-three being various manifestations of malarial poisoning. Of these latter, the ages of the patients ranged from 20 days to 13 years. The dosage varied from twenty-five centigrammes to three grammes in twenty-four hours. In no case did he observe the slightest unfavorable action upon the respiration or circulation. When large doses were given for some time the urine became colored a deep yellow or red, but albumin or sugar was never present. Its action in the malarial cases was prompt and efficient, reducing the temperature and shortening the period of the disease.

The twenty-six other cases comprised tuberculosis, lymphangitis, arthrosynovitis, parotiditis, Potts's disease, hip-disease, epilepsy, hysteria, chorea, otalgia, herpes zoster, urticaria, and painful tumor of the liver. In all these the remedy acted well in reducing high temperature, when present, and allaying pain. It also influenced favorably the nervous phenomena present in the cases of hysteria, chorea, and epilepsy. The drug is soluble in slightly acidulated water, and, as it has no taste, is well adapted for administration to children.

Strophanthus.

Wilcox (*New York Medical Journal*, March 13, 1897) presented at the last meeting of the Medical Society of the State of New York the result of twelve years' study of this drug. He said the reason that strophanthus had been considered by some observers to be uncertain was that there were four distinct species of strophanthus. His own observations had been made with *strophanthus Kombé*, the same preparation as had been used in Fraser's original investigations. He drew the following conclusions: (1) That strophanthus increased the muscular action of the heart by direct action on the muscle itself; (2) that it operated more rapidly than any other cardiac drug; (3) that it practically had no effect on the size of the blood-vessels; (4) that it regularly favored elimination by the kidneys; (5) that unless too frequently repeated, it had no cumulative action; (6) that it was unlike the other cardiac drugs in acting only on the muscle of the heart; (7) that it was about three hundred times as strong as the same weight of digitalis, and three or four hundred times as powerful as the same amount of caffeine. He recommended the use of strophanthus instead of digitalis in cases in which digitalis usually acted badly, in which the prolonged use of it caused dangerous vascular spasm.

Osmic Acid Injections in Neuralgia.

Franck (*Fortschritte der Medicin*, August, 1896, and *British Medical Journal*) records some results of treatment of neuralgia with injections of osmic acid. In three cases, of duration varying from two to nine years, where prolonged treatment by other methods had failed, injections of osmic acid were followed by rapid cessation of pain. In one of these cases, the patient, a woman aged 27 years, had suffered four years with neuralgia, which was so severe as to cause her to lose her hair and to waste. Partial relief was given by dividing the infraorbital nerve, but pain still persisted in the supraorbital region. This was completely cured by two injections of osmic acid, and the patient then gained flesh and recovered her hair. The solution used is a 1-per-cent. solution, one minim to four minims are injected on each occasion. The best results are obtained by injecting the acid directly into the nerve, and thus success is most likely where the nerve is superficial, and can easily be reached. The pain at the moment of injection is intense; in the case mentioned it caused fainting. The pain, however, rapidly passes off, and beyond this no evil result need be feared. This method of treatment may be successful where all other means have failed.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

Technique of Cesarean Section.

Hirst (*American Journal of Obstetrics*, January, 1897), recognizing the fact that Cesarean section may be forced on the general practitioner in an emergency at any moment, has laid down a detailed description of its technique for his guidance. If there be time to make arrangements, a period of about two weeks before term should be selected. It is unnecessary to excite labor-pains beforehand. The patient should be given a full hot bath two days before operation, and should be kept in bed. Administer the following pill three times a day:

℞ Strychnine . . . . . gr. $\frac{1}{20}$
Digitalis . . . . . gr. $\frac{1}{2}$
Quinine . . . . . grs. 2. M.

Secure movements of the bowels daily by two drachms of Rochelle salt every evening. Examine heart, lungs, and urine.

Day before Operation.—(1) Diet: Gruel for breakfast, soup for dinner, milk-toast for supper. One glass of milk at 10 A.M., 4 P.M., 9 P.M.

(2) Medicine: 5 P.M., afternoon before operation, ten grains of sulphonal in half glass of boiling water cooled down to a temperature that permits of its being drunk, if patient is nervous and has been sleepless; 9 P.M., half ounce of Epsom salts in a tumblerful of water.

Evening before Operation.—(1) Cleanse abdomen as follows: Sterilize for

twenty minutes at 240° F. one soft bristled brush, absorbent cotton, half dozen towels, gauze, binder, and a long gown.

(2) The nurse's or doctor's hands are prepared as for operation: Remove rings, scrub with brush, hot water, and tincture of green soap for ten minutes, clean nails with nail-file, scrub hands and arms with benzine and then with alcohol, immerse hands and arms in bichloride solution (1 : 1000) for two minutes; then put on the gown.

(3) The abdomen from ensiform to symphysis and from flank to flank is scrubbed with a soft bristled brush, tincture of green soap, and hot water for ten minutes, paying special attention to the navel and pubis. Wipe razor with cotton and alcohol, shave pubis, then scrub thoroughly with alcohol. Cover the abdomen with sterile gauze and apply binder.

Morning of Operation.—Give cup of beef-tea at 7 A.M. Hands of nurse cleansed as described; articles resterilized as described. Same cleansing of abdomen repeated as described, with the addition that before the alcohol scrubbing the abdomen is scrubbed with benzine. Wring out a sterile towel in 1 : 1000 bichloride solution and cover the abdomen with the towel. Put over it a thick layer of sterile cotton. Apply binder. Catheterize the woman just before anesthesia with a sterile glass catheter in aseptic manner. Give vaginal douche of one quart of 1 : 4000 bichloride of mercury solution, followed by a little sterile water. If bowels have not opened freely give enema,—pint of soapsuds and a drachm of turpentine.

The Operation.—With a large scalpel free incision from two inches above the umbilicus to just above the symphysis. Enlarge the abdominal opening downward as low as possible with scissors. While an assistant makes the wound gap deliver the womb from the abdominal cavity. The assistant now approximates the edges of the abdominal wound as closely as possible around and above the cervix, at the same time squeezing the latter with outspread hands. Incise the uterine muscle to the extent of an inch with a few rapid but light strokes of the knife, taking care not to wound the membranes. With a rapid movement of the left arm and hand tear the uterine wall down to the internal os. Rupture the membranes, detach the placenta, if in the way, and push it aside. Seize the child by the most accessible part and deliver. Drop the child with the placenta attached into a sterile sheet spread out over the outstretched arms of an assistant whose duty it is to revive the child, if necessary, and cut the cord. Then follows an easy hysterectomy: ligation of the ovarian arteries and the arteries of the round ligaments; application of clamps; cutting of the broad ligaments; preparation of peritoneal flaps; amputation of the womb; ligation of the uterine arteries; and over-sewing of the stump which is dropped. The abdominal wall had better be closed by the beginner with close-set interrupted sutures.

The Curette in Labor.

Budin and Charpentier (*Annales de Gynécologie et d'Obstétrique*, January, 1897) differ in their opinion of the post-partum use of the curette. A "giant curette" was exhibited recently at a French society by Nitot, designed especially for the uterus during the puerperium when the small sharp instruments, useful for the non-parous uterus, are dangerous. Budin declared in the discussion that he no longer uses the curette after labor. The simple practice of clearing off adherent fragments with the finger and then mopping the uterine walls has given excellent results in his hands. Charpentier strongly supports the early use of the curette under the same circumstances. He believes that suitable cases for curettage are kept too long

waiting. The instrument must be used before the infective process has become generalized. When the uterine tissue has undergone changes from that process the curette increases the danger. Charpentier has never had bad result, even indirectly, after the use of the curette in the puerperium.

The Suture of Recent Perineal Laceration.

Apfelstedt (*Münchener medicinische Wochenschrift*, Vol. xliii, No. 25, 1895) recommends the method proposed by Veit of confining the suture to the perineum in the closure of recent tears, on the ground (1) that needle-holes in the vagina or rectum favor infection of the wound; (2) that too many stitches destroy too much tissue; and (3) that when they are knotted a cavity is likely to be left in the wound. He uses two needles to each thread of silkworm gut or silk; these are inserted where the wounded surfaces meet, so as to emerge near the perineal wound. The first needle passes two millimetres below the junction of the two wounded edges of mucosa, and the lowest in the same way, two millimetres above the point where the edges of the wound in the rectal mucosa meet, the lines of the stitches spreading towards the perineum like a fan. Six or eight sutures are enough. The middle ones are drawn quite tight, the others but moderately so before being knotted. This method has been used by Apfelstedt since 1892. All the vagino-perineal lacerations have healed, and three out of four total lacerations. This was in a case of eclampsia.

Delayed Delivery of a Second Twin.

Kalnikoff (*Monatschrift für Geburtshülfe und Gynäkologie*, January, 1897) reports the case of a woman whom he delivered of a twin three days after the spontaneous birth of its brother. In this interval the mother had left her bed and attended to her household duties. Kalnikoff also removed both placentæ. The woman passed through a normal puerperium and both children lived.

Self-Inflicted Wound of Bladder in Childbed.

Kalnikoff (*Monatschrift für Geburtshülfe und Gynäkologie*, January, 1897) saw a patient who noticed, when micturating on the second day after childbirth, that something protruded from the vulva. Thinking that it was the after-birth she cut into the projecting object, which happened to be a cystocele. When seen by Kalnikoff a vesico-vaginal fistula had formed with gangrenous edges. The fistula healed after several months' antiseptic irrigation and the catheterization of the bladder at regular intervals.

Hysterectomy and the Mistaking of Pregnancy for Fibroid.

Lutaud (*Revue practique d'Obstétrique et de Gynécologie*, January, 1897) observes that the pregnant uterus has been mistaken and removed for fibroid by very competent men. Three years ago a surgeon in Paris, apparently relying too much upon his assistants for the examination of his patients, opened the abdomen of a woman who was supposed to have a fibromyoma. When exposed the uterus looked as though it was simply enlarged from pregnancy. It was, however, removed and a four-months' fetus found in its cavity. Believing that it had remained there for a long while and was macerated, he dropped it into alcohol, and was horrified to notice its vigorous movements as it fell into the preservative fluid. A more remarkable

case occurred about the same time in Bordeaux. An enormous uterus was cut off from its pedicle and put aside in the corner of the room. The stump was carefully cauterized and dressed and the patient put to bed with due deliberation. The uterus was then laid open. A great quantity of amniotic fluid escaped and a live 6-months' old child was discovered. The child lived and was reared and the mother recovered.

Treatment of Ovarian Tumors during Pregnancy, Labor, and the Puerperium.

Hohl (*Archiv für Gynäkologie*, Band lii, Heft 2) reports five cases in which pregnancy was complicated by ovarian tumors. From a study of these he draws the following conclusions:

(1) During pregnancy ovariotomy should, if possible, be performed in the early months. Premature labor should be favorably considered only in intraligamentous tumors when the operation is presumably difficult or in tumors which are fixed by adhesions. Puncture of the cyst as a therapeutic measure is out of the question.

(2) During labor the reposition of the tumor under anesthesia should, if possible, be done. Failing in this, cystic tumors should be aspirated or they may be opened after vaginal incision. Cesarean section is indicated in solid tumors when the child is alive, ovariotomy at the primary operation or after the puerperium. The performance of ovariotomy and the termination of labor *per vaginam* is not permissible.

(3) After a woman has been delivered while having an ovarian tumor, the extirpation of the tumor should be performed at the earliest time possible, certainly not later than the second week of the puerperium.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

Hysterectomy by Combined Abdominal and Vaginal Operation.

Penrose (*American Journal of Obstetrics and Diseases of Women and Children*, Vol. xxxiv, No. 6, 1896) writes that he has performed complete hysterectomy for cancer by a combined method of operation through the abdomen and vagina during the last year. In the combined operation, as usually performed, the vaginal part of the operation is done first, the abdominal part last. The method which he has followed was begun through the abdomen and finished by way of the vagina. The abdomen is opened, the ovarian arteries and round ligaments are secured by ligatures. The broad ligament is divided down to the level of the internal os, and the bladder is dissected from the anterior surface of the uterus and upper portion of the vagina. A small gauze pad is then inserted in the vesico-vaginal space; another in Douglas's pouch, immediately behind the upper portion

of the posterior vaginal wall. The abdominal incision is then closed. The woman is then placed in the dorso-sacral position; the posterior and anterior vaginal fornices are opened by incisions made directly over the gauze pads. The vaginal mucous membrane is then divided on the sides of the cervix, and the base of the broad ligaments are secured with large forceps. The uterus is then cut away, the gauze pads removed, and the vagina packed with gauze. The advantages which he claims for this method of combined operation are as follows: The dirty part of the operation is done last. The septic cervix is withdrawn through the vagina and not through the peritoneal cavity. The vaginal part of the operation is facilitated by the preliminary separation of adhesions, by division of the upper portions of the broad ligaments, and by the dissection of the bladder from the uterus. The operation, he believes, has advantages over complete abdominal hysterectomy. In this latter operation the vaginal vault is either closed by suture after the uterus has been removed, or more usually the safer method is followed of leaving the vaginal vault open and draining by gauze through the vagina. If the latter is employed there is usually infection of the ligatures which secure the uterine arteries, with resulting persisting sinuses. Again, when the vaginal vault is opened from above, the operator cannot determine with certainty that the incision is made outside of infiltrated tissue, and in case of cancer of the cervix it is frequently necessary to excise a portion of the vagina after the uterus has been cut away. This is contrary to sound surgical advice to remove concerous tissue in one mass when possible.

A Case of Carcinoma of the Uterus in a Girl Nineteen Years of Age.

Tschop (*Tuschnoruss kaja Medicinskaja Gazata*, No. 7, 1896; *Centralblatt für Gynäkologie*, No. 2, 1897) reports a case where carcinoma of the uterus developed at the early age of 19 years. The patient, four months before coming under the writer's observation, after a fall down-stairs, fainted and began to bleed profusely from the genitals. From this time on she had a profuse leucorrheal discharge, and now and then a slightly blood-stained discharge from the vagina during defecation. The greater part of the cervix uteri was found covered with a thick, easily-torn, new growth. The vagina and adnexa were free from infiltration. The uterus was removed *per vaginam*, followed by uninterrupted recovery. The microscopical examination confirmed the diagnosis.

The Importance of Early Diagnosis in Carcinoma of the Uterus.

Kessler (*St. Petersburger medicinische Wochenschrift*, No. 37, 1895) calls attention to the grave importance of early diagnosis of carcinoma of the uterus by describing two cases. The first patient, regardless of the most energetic persuasion by her physician, allowed the disease to progress for a year and a half, until the removal of the uterus had become impossible. The other patient had been treated for many months with ergot, vaginal douches, and cauterization, until she also was beyond help. This latter case died of carcinoma because of ignorance or neglect on the part of her physician. Kessler says that carcinoma of the uterus in its early stage can be cured. The mortality of the operation is only 5 per cent. His statistics show that 7 per cent. are permanently cured; other operators, 10 to 15 per cent. Winter states that in large clinics only 25 per cent. of the cases appearing for treatment are suitable for the operation of hysterectomy, the disease in a stage where operation can promise cure. One-fourth of this 25 per cent. are permanently cured, —equal to 7 per cent. The reason why so few cases of carcinoma of the uterus are

operable is that the disease in its early stage causes few symptoms, and the patient comes to the physician too late. On the other hand, the physician often neglects to make a vaginal examination, or if he does make the examination he fails to make a diagnosis of carcinoma. Of sixty-two women with carcinoma (forty-seven advanced carcinoma) coming to the writer, only twenty-six had been examined by the family physician. Kessler says that any family physician can be excused for not operating on these cases, but none can be excused for failing to make a diagnosis.

Regarding Papillary Ovarian Cystoma.

Semb (*Centralblatt für Gynäkologie*, No. 11, 1896), in a very exhaustive paper on this form of ovarian cystoma, concludes that the true papillary cystoma are distinct growths, that they are to be separated from the papillary cysto-carcinoma, and also from the papillary colloid cystoma. They are most benign new growths; the epithelial covering of the papilla is always infiltrative, never shows atypical growths; they do not cause cachexia; never give metastasis; it is not destructive, free from return, and is only dislodged and implanted. The implantation on the peritoneum is also benign. Semb says that carcinomatous degeneration of papillomatous cystoma has never been proven. Usually the papillary growths arise from the superficial epithelium. In one of the cases investigated by the writer the papilloma appeared to develop from the primary follicles. The prognosis in the disease after operation is always good; the remaining papillary growths on the peritoneum disappear. If the growths are extensive they always follow the course characteristic of benign growths. In elderly persons the writer removes both ovaries, as sometimes a similar growth later develops in the remaining ovary which appears healthy. Frequently the disease is bilateral, and often they grow intraligamentous.

PATHOLOGY.

UNDER THE CHARGE OF

JOHN GUITÉRAS, M.D.,

ASSISTED BY

DAVID RIESMAN, M.D.

The Significance of the Leucocytes in Exudates and Transudates.

Winiarski (*Kronika Lekarska*, 1896, No. 12; reference in *Centralblatt für die allgemeine Pathologie und pathologische Anatomie*, March 1, 1897) confirms the assertion of Korczynski and Wernicki that in serous exudates which neither show a tendency to pass into suppuration nor are due to malignant disease the lymphocytes, especially the small ones, preponderate numerically. When the neutrophiles are in the majority, the case is either one of neoplasm (carcinoma) or suppuration is going to take place. The presence of eosinophiles and of red corpuscles is without significance. The author found in pleural and peritoneal transudates almost exclusively lymphocytes; in purulent pleural exudates only neutrophiles; in all serous inflammatory effusions, where new growths were not present,

lymphocytes were practically the only cells found. None of the last group ever passed into suppuration, although the number of lymphocytes rose at times as high as 6230 per cubic millimetre. In a case of meta-pneumonic serous pleurisy, in which the number of leucocytes was small, but in which neutrophiles were chiefly present, suppuration developed later. All this is true of peritoneal exudates.

In the serous pleural exudates the number of leucocytes varies from 270 to 9270 per cubic millimetre; in the transudates, from 60 to 300. In peritoneal effusions the figuers are smaller. During the absorption of exudates and transudates the number of leucocytes increases; during the formation of fibrinous deposits it diminishes.

Clinical Histology of the Blood.

Wernicki (*Prze Glad Lekarski*, March 7, 14, and 21, 1896; reference in *Centralblatt für die allgemeine Pathologie und pathologische Anatomie*, March 1, 1897) has made some observations on the blood that are of interest in relation to Müller's subsequently published discovery of the hemakonia.

In addition to the well-known morphologic elements, the blood contains yet another constant constituent in the form of minute spheric bodies, the number of which increases in preparations that are not fresh. Studies have shown that these small motile bodies are nothing more than dispersed granulations of the neutrophiles or myelocytes which become free when these cells disintegrate. For this reason it is not permissible to attribute any pathologic or diagnostic value to such bodies. Larger motile granules (1–2 μ) may be: (1) eosinophile granulations (most frequently); (2) γ-granulations (very rare except in leukemia); (3) Laveran's "corps sphériques,"—*i.e.*, young unpigmented malarial parasites; or (4) very small pale microcytes and poikilocytes. For purposes of differentiation staining is indispensable. The author employs the following solutions: (*a*) Saturated watery solution of methylene blue, 100; eosin (French, soluble in water), 1.5; absolute alcohol, 132; distilled water, 168; 20 per cent. NaOH solution, 16 drops. After standing ten days and then filtering, the solution is used warm (heating on cover-glass). (*b*) Distilled water, 100; glacial acetic acid, 2 drops; ½ per cent. eosin solution, 1; concentrated solution of orange, 3 drops. This is used for decolorization (a few seconds only); the cover-glass is then washed in water, dried, and mounted in balsam.

Normal red corpuscles will be rose-colored; poikilocytes poor in hemoglobin, a bluish-red; small lymphocytes, uniformly dark blue; eosinophile granulations, bright red; δ-granulations, dark blue; and γ-(basophile) granulations, dark bluish-red. Plasmodia became steel-gray-bluish. The protoplasm of the neutrophiles and blood-plaques remains unstained.

The Infectious Origin of Certain Perforating Round Ulcers of the Stomach.

Widal and Meslay (*Société Médicale des Hôpitaux*, Séance du 12 mars., 1897; *La Semaine Médicale*, March 17, 1897), in the body of a patient dead of staphylococcic pyemia, secondary to a suppurating corn of the sole of the right foot, found a litre of pus in the pericardium, abscesses of the kidney, the epididymis, and the lung.

On opening the stomach a punched-out ulcer was found, its base being formed by the subperitoneal tissue; about the ulcer the mucosa and submucosa were considerably edematous and vascularized. Staphylococci were, however, not found in the sections. But despite their absence the acute ulcer should be attributed, Widal

and Meslay believe, to the infection. They hold that a small abscess or erosion was produced by the staphylococci, and that the gastric juice rapidly transformed the small loss of substance into a large ulcer. Primarily microbic, the ulcer later became peptic, the bacteria disappearing with the spread of the lesion. Gastric pain, vomiting, and hematemesis had been absent.

The first stage of ulceration is sometimes met with in cases dead of septicemia, as, *e.g.*, in women that have perished of puerperal infection. In animals dead of experimental infection these early stages of ulceration are frequently encountered, and even true ulcers, though more rarely, may be seen.

In endeavoring to settle the infectious origin of ulcers we cannot depend on the finding of the pathogenic micro-organism, for the latter is only discoverable in the beginning stages, in the region of the specific ulcer; when the round ulcer has once been formed, the organisms are no longer found,—the ulcer has lost all signs of its specific etiology. [Nauwerck (*Münchener medicinische Wochenschrift*, September 17, 1895) reported two cases of such mycotico-peptic ulcers, one in connection with endocarditis of rheumatic origin, the other in a case of scarlet fever. The edges of the first showed masses of streptococci and diplococci; those of the second, streptococci. Nauwerck believes that many gastric ulcers begin as hemorrhagic erosions and that some of these are microbic in origin.]

Distribution of the Agglutinating Substance in the Body of Typhoid-Fever Patients.

Courmont (*Société de Biologie*, Séance du 20 février, 1897; *La Semaine Médicale*, February 24, 1897) has investigated the comparative agglutinating power of the blood of the general circulation and of that from various organs in seven autopsies on cases of typhoid fever. In three cases an exact quantitative estimation was made.

While the blood of the heart, of the lung, of the kidney, of the thyroid gland, and of the ovary exhibited a very marked agglutinating action, like that of the blood during life, the blood of the liver and spleen, the bile, and the juice of the mesenteric glands gave a reaction on an average ten times less intense; in some cases it was entirely absent. The liquid of the serous cavities produced an intense reaction, most frequently when there was an acute effusion due to the presence of another micro-organism. This is not true of pleural effusions due to the typhoid bacillus (Ménétrier).

The Pathology of Bulbo-Spinal Atropho-Spastic Paralyses.

Hoche (*Neurologische Centralblatt*, March 15, 1897) used Marchi's method for the study of the nervous system of a typical case of amyotrophic lateral sclerosis with progressive bulbar palsy in a man, aged 52 years, who died with symptoms of vagus-paralysis a year and a half after the beginning of the disease. The designation in the title is employed in accordance with the suggestion of Senator (*Deutsche medicinische Wochenschrift*, 1894). The patient had presented spasticity of the upper and lower limbs with exaggerated reflexes, some atrophy of the interossei of the hands, fibrillary twitching, *main-en-griffe* of the left hand; the pupils and external ocular muscles were normal; the tongue showed no anomaly; sensory or sphincter disturbances were absent; mimic movements was normal; there was progressive impairment of swallowing and of speech, and towards the end persistent acceleration of the pulse.

The gross morbid findings were unimportant. In Marchi's (and Weigert's) preparations the following was noted: A degeneration of the entire motor pathway and slight changes in the ganglion cells; in addition extensive degeneration of the fibre systems that unite the motor nuclei, both of the cranial and of the spinal nerves,—viz., the posterior longitudinal bundle and the short tracts of the antero-lateral columns.

It was apparent from a combined study of Marchi's and Weigert's sections that the degeneration in the pyramidal tracts had progressed from below upward; it could be traced through the corona radiata to the central convolutions. In the nuclei of the cranial nerves but little degeneration of the ganglion-cells was noted; in the cord the number of cells was reduced in the cervical portion, apparently not at all in the dorsal, while in the lumbar region the fibrillar net-work of the anterior horns plainly showed degenerative changes.

In marked contrast with these rather insignificant cell-changes were the degenerations of the root fibres of the oculomotor, pathetic, abducens, facial glosso-pharyngeal, vagus, hypoglossus, and spinal accessory nerves. The involvement of the ocular nerves was interesting in view of the absence of clinical symptoms referable to the eyes, while those in the facial, hypoglossus, and spinal accessory were more marked than had been expected.

The chief interest of the case lies, however, in the involvement of the two commissural tracts. Marie was the first to call attention to this degeneration in the antero-lateral tracts, and Brissaud went so far as to consider amytrophic lateral sclerosis a primary disease of the supplemental or commissural fibres. While withholding his full approval of this theory, the author believes that the changes demonstrated in the posterior longitudinal bundle in his case accord very well with it, for this bundle is for the motor cranial nerves what the short tracts of the cord are for the nuclei of the different spinal segments.

The pathologic anatomy of amytrophic lateral sclerosis (bulbo-spinal atrophospastic palsy) may be summed up as follows:

(1) Destruction of the motor cortical neurons—degeneration of the pyramidal tracts to their terminations.

(2) Destruction of the peripheral motor neurons,—motor pathway from the nuclei of the cranial and spinal nerves to their terminations,—the muscles.

(3) Destruction of the commissural cells and fibres in the cortex, the posterior longitudinal bundle, and the antero-lateral tracts of the cord.

Of the clinical phenomena which correspond to the disappearance of the commissural tracts we know practically nothing.

MISCELLANEOUS.

The Semi-Centennial Meeting of the American Medical Association.

The semi-centennial meeting of the American Medical Association, which will be held in Philadelphia on June 1, 2, 3, and 4, 1897, bids fair to surpass, in the character of the entertainment, the scien-

tific papers, and the number in attendance, any meeting which has heretofore been held. The committee in charge have been able to obtain large and roomy places of meeting for the general meetings and the section meetings, all within a single block and within very short walking distance or immediately adjacent to the largest and most comfortable of the Philadelphia hotels.

For the week preceding and following the meeting the Committee of Arrangements have also arranged for clinical courses which will be open without charge to all physicians who may visit the city at that time. These courses cover every branch in medicine and its specialties, and will afford visitors the opportunity of seeing the active clinical work of all the great teachers of Philadelphia, which is now, as it has been for so many years in the past, in every respect the medical centre of the United States.

BOOK NOTICES.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES AND ANALYTICAL INDEX. By CHARLES E. SAJOUS, M.D., and seventy associate editors. Philadelphia: The F. A. Davis Company, 1896.

The ninth annual issue of this important work presents several new features which call for comment. The first change noted is that the length of abstracts has been increased. This was done in order to fully convey an author's meaning and to enable the reader to utilize the suggestions made to the best advantage. This change has necessitated a rearrangement of the entire text. With the view of carrying out the new plan to the best advantage and with the hope that the different contributions might be as nearly uniform as possible, the majority of the articles has been prepared under the direct supervision of the editor by his immediate assistants, and in this form submitted to the associate editors in charge of the various departments, who have had the opportunity to erase, change, or add according as their judgment dictated.

Another new feature, and one that will be much appreciated, is the analytical index and cyclopedia of treatment which is a summary of every practical article in the *Annual*, and of the criticisms of the associate editors,—"the active principle," as the editor happily calls it, of the year's labors. The excerpts are arranged in logical sequence and their brevity permits one to rapidly run over a subject. The name of the author is given at the end of each excerpt, and a reference number indicates the exact location of the more extended abstract in the main part of the work.

Among other minor improvements may be mentioned the use of larger heavy-faced type in the headings and side headings instead of the small capitals and italics formerly employed, the use of the proper form in presenting prescriptions, the increase in the number, and in the excellence of the colored plates, and the collection of all subjects relating to therapeutics in the fifth volume, which may be kept on the physician's desk for ready reference.

The members of the associate staff have faithfully performed their share of the work for which due acknowledgment is made. The editor has felt called upon to particularly praise the commendations of Professor O'Dwyer, on intubation; Dr. Dudley Buxton, on anesthetics; Professor Obersteiner, of Vienna, on diseases of the spinal cord; Professor J. William White, of Philadelphia, on syphilis; and Professor J. McFadden Gaston, of Atlanta, on thoracic surgery.

In conclusion, it is sufficient to say that the present issue of the *Annual* is better in all of the old features than any of its predecessors, while the analytical index is a very useful addition, enabling the reader to refer promptly to any subject, and to decide from the excerpts as well as from the names of the authors just which article contains the information desired.

The style of the work is uniform with the previous issues.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY: Being a yearly digest of scientific progress and authoritative opinion in all branches of medicine and surgery, drawn from journals, monographs, text-books of the leading American and foreign authors and investigators. Under the general editorial charge of GEORGE M. GOULD, M.D. One volume of nearly 1200 pages, illustrated. Philadelphia: W. B. Saunders, 1896.

This is the second issue of a year-book which has rapidly won for itself a prominent place in the esteem of the medical profession. It has fully met the great need which existed for a work which should present a complete summary of each year's medical progress in a convenient form, systematically arranged, and accompanied by carefully considered critical comments from a staff of experienced editors. The plan of pronouncing editorial judgment upon new proposals and investigations is one of the best features of the book, for too often new suggestions are heralded in such an attractive and plausible manner that the unwary are led into mistaking rhetoric for logic.

In the main the corps of collaborators is the same as in the issue of 1896; we note, however, that Dr. Duhring has assumed the editorship of the department of dermatology in the present volume. The work abounds in excellent illustrations, among which are several colored plates, and the typography is of unusual excellence. The book is a credit to American literature and commends itself to practitioners in every department of medicine.

A Text-Book of Special Pathological Anatomy. By Ernst Ziegler, Professor of Pathology in the University of Freiburg. Translated and edited from the eighth German edition by Donald MacAlister, M.A., M.D. (Camb.), and Henry W. Cattell, M.A., M.D. Sections 1–8. New York and London: The Macmillan Company, 1896.

About ten years ago Dr. Donald MacAlister presented the English-reading public with a translation of Professor Ziegler's work, and since that time it has been the standard text-book on pathology both in England and America. In no department of medicine is progress so rapid as in pathology, hence we are not surprised that eight editions of the original work have been required to keep it abreast of the times. In preparing the present edition Dr. MacAlister has had associated with him Dr. Henry W. Cattell, of the University of Pennsylvania, and students unfamiliar with the German language are exceedingly fortunate in having access to authoritative teaching through such an admirable translation. This volume contains the first eight sections of the part devoted to special pathological anatomy. The subjects of these sections are: (1) Blood and lymph; (2) the vascular mechanism; (3) the spleen and the lymph glands; (4) the osseous system; (5) the muscles and tendons; (6) the central nervous system; (7) the peripheral nervous system; and (8) the skin. A useful feature is the ample bibliography which is appended to the discussion of the various subjects. The section devoted to the central nervous system embodies the most recent studies in this department of pathology, and is especially commendable for the clearness with which subjects are presented. The book is handsomely printed on good paper, and is richly illustrated.

A Manual of Bandaging. By C. Henri Leonard, A.M., M.D., Professor of the Medical and Surgical Diseases of Women, and Clinical Gynecology in the Detroit College of Medicine. Sixth edition. Detroit: The Illustrated Medical Journal Company.

The main feature for commendation of this book is that each illustration shows the direction of the various turns of the bandage with arrow-heads, and each turn is properly numbered; this renders the book a self-instructor to the reader, who has but to apply the various bandages to a companion a few times, when the "trick" of its application will have been learned. Besides the "roller bandages," the various ⅂s "cravats," "slings," "tailed," "adhesive," and "plaster" bandages, and "immovable dressings" are given. The book is divided into sections treating of "the bandages of the head," of "the body," of "the upper extremity," of "the lower extremity," "knots," "strappings," "compresses," and "poultices" with full description of making and applying the same. There is an illustration for nearly every bandage described.

THE YEAR-BOOK OF TREATMENT FOR 1897. Philadelphia and New York: Lea Brothers & Co., 1897.

The Year-Book of Treatment furnishes a critical and authoritative epitome of a year's progress in all branches of practical medicine. The fact that it has successfully passed through thirteen annual issues is a sure guarantee that it renders an acceptable service to the medical public. Practically every advance suggested in the line of therapeutics during the past twelve months is here set forth in a brief but comprehensive manner. Not only are the articles carefully abstracted, but, when deemed necessary, a judicious criticism has been appended by a competent authority. The work is systematically arranged and well indexed, and the present issue will, no doubt, win for itself the reputation of its predecessors.

A COMPLETE CASE-RECORDER IN GENERAL MEDICINE AND GYNECOLOGY. For the use of Physicians, Students, Dispensaries, and Hospitals. By S. B. LYON, M.D. Chicago: A. L. Koursh Co., 1895.

This Recorder consists of eight blank pages: (1) History of present condition; (2) respiration and circulation; (3) abdominal organs and genito-urinary system; (4) nervous system; (5) gynecology; (6) laboratory blank,—for examination of stomach contents, urine, feces, and blood; (7) management blank; (8) bedside recording blank. The aim has been to aid in the systematic study and record of cases. The blanks seem very complete and will doubtless well serve the purpose for which they are intended. A plate is added showing the position of the viscera and the regions of the abdomen, which is supplemented by brief descriptions.

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FORMALDEHYDE.

By H. C. Wood, M.D., LL.D.,
Philadelphia,

The gaseous body known as formaldehyde, formyl, or formol, has been sufficiently studied in the laboratory to indicate that it is a very valuable addition to our practical medicaments. Owing to the efforts of an enterprising firm of pharmaceutical chemists it is chiefly known by the profession as formalin. Formalin is, however, an aqueous 40-per-cent. solution of formaldehyde, protected by a trade-mark name, and, therefore, loaded with all the excess of price, etc., which are of necessity associated with proprietary remedies. We know of no reason, however, why doctor or patient should pay this tax; and as the demand grows various solutions of formaldehyde will probably be put upon the market. Indeed, under the name of formaldehyde, Merck & Co. to-day sell an aqueous solution at the rate of 75 cents a pound, including the bottle; the corresponding price of formalin being 85 cents a pound, also including package; so that by purchasing the solution of Merck, there is a saving of over 12 per cent. For the purposes of calculation and production of strength a 50-per-cent. solution would be preferable, but it appears not to be permanent, becoming after a time turbid.

As long ago as 1888, Trillat discovered the germicidal powers of formaldehyde, and in a tabulated statement of the results obtained by numerous observers, Marion in 1895 showed there was a widely founded consensus of opinion that 1 part in 20,000 of the gas would kill most bacteria if the contact were prolonged. Most observers agree in stating that the germicidal power of formaldehyde is equivalent to that of corrosive sublimate, but later reports (as those of Walter,

made in 1896) indicate that while it is many times stronger than carbolic acid it is inferior in strength to corrosive sublimate; and that a contact of one hour is necessary for the destruction of *all pathogenetic spores* by its 1-per-cent. solution. A very important observation is that of Aronson and Burkhard, according to whose experiments this substance is not merely germicidal but has the power of stripping the toxins of diphtheria, of tetanus, and probably of other diseases of their poisonous powers.

The action of the drug upon the higher animals is comparatively feeble. Trillat states that sixty-six cubic centimetres of it per kilogramme are not fatal to the guinea-pig, although the urine passed by the poisoned animals is incapable of putrefaction; while no pronounced symptoms were produced in the rabbit by the injection of thirty-eight centigrammes per kilogramme. According to Mosso and Paoletti, fifty cubic centimetres per kilogramme injected hypodermically into the dog caused a progressive poisoning, with fall of temperature and death after many days. The same amount given by the stomach produced rapid effects, with violent convulsions, general rigidity, salivation, stupor, unconsciousness, and death. A curious fact was noted,—namely, that the drug was much more poisonous when taken by the stomach than when taken hypodermically. This is evidently connected with its intense irritant properties. It is probable that it causes a severe gastro-enteritis; and it is possible, especially as deep eschars have been noted following the hypodermic injections, that when it is injected into the cellular tissue the local effects may interfere with absorption. Small doses have been found by Mosso and Paoletti to increase the blood-pressure, probably by causing peripheral contraction of the arteries, while the large doses depress the circulation, and so act upon the blood that it coagulates with the separation of a dark-red serum.

The gas formaldehyde is exceedingly irritant, and it has been noted by Mosso and Paoletti that free inhalation is liable to produce severe pulmonary inflammation, ending it may be fatally.

Thus far formaldehyde has been used in practical medicine,—chiefly first, as a preservative; second, as a germicide and disinfectant. In the Anatomical Laboratory it has been largely employed, and is, we believe, highly considered by most anatomists. Dr. Holmes, the University anatomical demonstrator, informs us, however, that a 3-per-cent. solution will not keep bodies unless they are completely immersed in it; parts floating above the liquid rapidly drying and being destroyed by mould. Also, that the brain in its interior softens and putrefies in such solution. According to Professor Orth, the addition of 10 per cent. of a 40-per-cent. solution of formaldehyde to

100 parts of Müller's solution greatly increases the preserving and hardening action of that solution. As, however, the compound solution begins to decompose in two days after its mixing it must be made freshly at the time of using.

The chief interest to the general profession, however, of formaldehyde centres at present in its powers as a germicide and disinfectant, and it looks as though it would, for all ordinary purposes of the hospital and sick-room, replace other substances. Hitherto there has been no practical method known of disinfecting apartments. A peculiarity of the gas formaldehyde is its power of penetrating not only animal tissues but almost all organic substances, so that Van Ermengen and Sugg, in 1895, demonstrated in an elaborate series of experiments that it is possible to sterilize books by means of formaldehyde in an approximate quantity of five cubic centimetres to one litre of air; while in our own University Laboratory, Horton in 1896 showed that books infected with various pathogenetic germs could be disinfected by being shut up for fifteen minutes in an atmosphere containing the vapor of commercial formalin, one cubic centimetre of the formalin to 300 cubic centimetres or less of air. The method of Trillat, however, is without doubt greatly superior to evaporation or pulverization of the solution of formaldehyde. It consists in the use of the formaldehyde directly after its production by the passage of the vapors of methylic alcohol over red-hot metal. Employing a very ingenious apparatus devised by himself, Trillat proved that it was possible to completely disinfect rooms and the furniture contained therein by the consumption during six hours of from four to six litres of methylic alcohol for each 300 cubic metres of the room.

In the very recent (January, 1897) report of an elaborate series of experiments, Dr. J. J. Kinyoun, of the United States Marine Service, has confirmed all the statements of Trillat; and has further shown that none of the ordinary fabrics are injured by the gas, which is entirely capable of completely disinfecting curtains, carpets, clothing, bed-covering, and the minor forms of furniture, although it is doubtful whether heavy upholstered furniture, such as sofas and mattresses, can in their interior be thoroughly disinfected. Nevertheless he did succeed in killing germs underneath ten layers of blankets.

There is at present offered for sale in the markets of the United States several forms of formaldehyde lamps, which we believe are all adaptations of the Trillat system, and are probably all of them efficient. We have known influenza apparently put an end to in a house where cases were continually recurring by its use; and the time seems

not far distant when some such apparatus will be owned by every physician and used always in private practice where there has been germ-disease. The formaldehyde is so irritating that no one can stay in the room during the disinfection, but the apparatus is automatic and can be left to itself. Rooms can undoubtedly be disinfected by pulverizing in them with steam atomizers formalin or other solution of formaldehyde. There is, however, no reason for believing that the results obtained with formalin are better than those obtained with the gas formaldehyde, probably they are not as good. The expense with formalin is very many times greater than with formaldehyde. Thirty-two grammes of methylic alcohol theoretically should yield thirty grammes of liquid formaldehyde, as that compound exists under the influence of intense cold or under pressure. This amount of the liquid formaldehyde at ordinary pressure and a temperature of 60° F. should make 23.4 litres of the gas formaldehyde, the form in which the substance usually exists. Calculating this out it will be found that one pound of methylic alcohol should yield 355 litres of formaldehyde gas, or about 400 quarts or about 100 gallons. As pure methylic alcohol is listed by Merck at $1.09 a pound, theoretically there should be obtained for $1.09 as much of the vapor as exists in 250 gallons of formalin, a substance listed at 85 cents a pound. Even supposing that 30 per cent. of the methylic alcohol is wasted in the practical making of the formaldehyde, it is plain that the cost of the vapor is many times less than of a corresponding amount of formalin.

Formaldehyde has not as yet been fully tested in practical surgery, but there is sufficient knowledge to indicate that it may prove to be the best of the known germicides. The taste of it and the irritant quality of the solution, along with the feebleness of its toxic properties, make serious accidental poisoning by it very improbable; and also make still more improbable, practically impossible, any fatal results parallel to those which have been so frequently produced by the surgeon when by the too free use of corrosive sublimate or of carbolic acid he has caused the death of the unfortunate patient; a result, in our opinion, which has been far more frequent than is generally admitted.

It would appear, also, that formalin is not only a germicide but will so act upon various organic materials as to remove bad odors; at least, according to Walter, a 1-per-cent. solution will almost immediately and entirely deodorize feces. For the cleansing of vessels in the Anatomical Laboratory the ½-per-cent. solution of formaldehyde suffices, but for most purposes in the clinical amphitheatre the 1-per-cent. solution may be used. According to Walter, washing the hands with it and afterwards with alcohol renders them completely

antiseptic, while it does not stain and appears not to irritate more than the other antiseptic solutions used. It is stated that it does not in any way affect instruments, so that its use is superior to the method of boiling as commonly practised because it leaves the edges of the knives undulled. We are also informed by surgeons that it affords a very efficient means of preparing catgut.

It seems to us probable that by the use of the gas itself many of the tedious procedures at present connected with heating in the preparation of surgical dressings may be avoided. All that would probably be necessary to do would be to connect the nozzle of a formaldehyde-forming lamp with the copper or tin vessel containing the dressings, so as to allow a current of the vapor to pass freely through in order to completely sterilize the dressing. Experiments are necessary, however, to show how far what seems probable *a priori* would endure in practice.

There appears to be little doubt as to the great value of formaldehyde as a local application, although its full powers have as yet been scarcely made out, while there appears to be no danger of poisoning by it, although its solution, if used too strong, is liable to produce excessive irritation of the sound tissues. In the University Hospital, as well as in the Presbyterian Hospital and in private practice, Professor Willard has used formaldehyde in all sorts of wounds, in carbuncles, and in various infected sores. For washing out and purifying an infected wound he employs a 2-per-cent. solution. For a continuous local application, or for free irrigation, a quarter of the 1-per-cent. solution; and while the effects upon suppuration and the general evidences of infection have been very pronounced in no case has there been any local irritation. Professor von Winckel, of Berlin, reported to the Gynecological Society of that city that he had found the agent extremely effective in gonorrheal vaginitis and other infective diseases of the female genitals; and that while a 4-per-cent. solution of formaldehyde could often be painted with great and immediate advantage upon the cervix or other diseased part, 1 part in 10,000 is effective by the method of irrigation. It is very probable that strong solutions of formaldehyde will be found to be a very valuable remedy in the treatment of chancroids, poisoned wounds, etc. Of course, these strong solutions should be used at first tentatively, and always as though they were mild caustics.

A suggestion which we throw out for the testing of surgeons is whether it be not possible by means of the simple formaldehyde lamp to immediately disinfect wounds by allowing the vapors of the formaldehyde to be discharged for a few moments into the wound. The penetrating character of these vapors is such that *a priori*, at least,

it appears probable that they would penetrate into the recesses of the wound much better than would a liquid solution. In bad cases of peritonitis with the whole abdominal surfaces infected, it is notorious that laparotomy, as though frequently practised, is almost invariably followed by death; but here again the possibilities of rapid disinfection and purification by means of the gaseous and seemingly scarcely toxic vapor appear to open out a possible avenue of safety. The momentary irritation of the peritoneum would probably not be severe enough to create serious shock; while our present knowledge indicates that it would interfere with rather than increase septic absorption.

CATARACT AND ITS ASSOCIATION WITH THE GOUTY AND RHEUMATIC DIATHESES, AND THEIR RELATION TO DISEASES OF THE EYE.[1]

By S. D. Risley, M.D.,

Philadelphia,

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It is not difficult to trace a distinct clinical relationship between a large group of ocular affections and the lithic acid diathesis. The eye symptoms from which many persons suffer disappear promptly under out-of-door life, with the attending muscular exertion, deeper breathing, and increased excretion. The blood-vessels and tissues are relieved by these means of the products of imperfect metabolism consequent upon sedentary life and the over-supply of rich foods. As a result, not only does the general health improve but the eye-symptoms disappear. While the relation of these ocular discomforts to the milder or incipient forms of lithemia is too frequently overlooked, I believe it is quite as common to neglect the important bearing this diathesis has upon the more serious affections of the eye which occur especially during and after middle life.

The diseases of the heart and general vascular tree, the renal and hepatic complications associated with and in some sense dependent upon impairment of the ultimate processes of nutrition, the high arterial tension, the hypertrophied left ventricle, the chronic nephritis and contracted kidney, the rigid arterial walls becoming atheromatous, angina, apoplexies,—present a picture of serious disease which we are only too frequently called upon to witness.

[1] Read before the Congress of American Physicians and Surgeons, May 4, 1897.

It is not to be supposed that under these conditions the ocular blood-vessels can escape the disaster which has fallen so heavily upon the general vascular system, or that the eye alone should escape the general impairment of the nutritive functions. Indeed, when we consider that the nutrient membrana of the eye—the chorioid—is a mesh-work of blood-vessels, ramifying through a loose connective-tissue stroma, we are prepared *a priori* to expect the striking clinical picture of disease so frequently presented to the ophthalmic surgeon for study. Indeed, he enjoys by the aid of the magnified ophthalmoscopic image a unique opportunity to study pathological change progressing in living structures.

It is under these peculiarly favorable conditions that he is permitted to study the steadily-advancing degeneration of the retinal blood-vessels,—*i.e.*, the arterio- and phlebo-sclerosis; the formation of yellowish-white spots or splotches of exudation in the region of the macula, or between the macula and optic nerve, or possibly distributed more widely over the eye-ground; or, to witness the innumerable small retinal apoplexies in so-called hemorrhagic retinitis, in the later stages of nephritis, in perivasculitis, and hemorrhagic glaucoma, and also the chorioidal disease which so uniformly precedes incipient cataract, and upon which, it is the contention of this thesis, the cataract in large measure depends. In all of these diseases in a considerable number of cases the blood-vessel change, which has so seriously disturbed the nutrition of the eye, has for months, or it may be for years, been steadily advancing *pari passu* with corresponding changes going on in the general vascular system. The grave forms of eye-disease which have been enumerated always lead the thoughtful physician to a careful and pains-taking analysis of general conditions, and they usually prove to be but one of the many other groups of symptoms pointing to general impairment of the vital functions. It is this fact which makes these forms of ocular disease with hemorrhage so ominous of cerebral apoplexy.

The frequent occurrence of cataract in association with the grave forms of general and local disease which have been mentioned, and the fact that like these it appears during and after middle life, when the stress of living has begun to wear upon the complex organism, suggests a probable relation of cause and effect.

The classification of hard cataract as *senile* has, however, served in great measure to fix attention upon the age of the patient as the principal etiological factor, and to obscure its possible relations to local and general pathological states which in their essential nature are very far removed from the evidences of physiological decline which are characteristic of a normal and peaceful old age.

It should be borne in mind that, while the lens loses its elasticity and becomes hard or even straw-colored as age advances, and by this manifests its participation in those inevitable changes quite correctly regarded as senile, it, nevertheless, is only in exceptional instances that it loses its transparency to a degree which seriously impairs the acuity of vision. It is, moreover, true that in many persons of great age, and in others where the signs of senility are exceptionally pronounced, the transparency of the lens is preserved to the last, as demonstrated by their excellent sharpness of vision. When therefore the lens undergoes not only physiological hardening, but becomes also opaque, it should suggest the presence of pathologic causes for this extraordinary occurrence.

It is unquestionably true that opacity of the lens frequently occurs where we can discover no trace of the rheumatic or gouty diathesis in the individual or his ancestry; but I have been at pains to show that even in these individuals the incipient cataract was so uniformly preceded by retino-chorioidal disease and vitreous degeneration as to enforce the opinion that the opacity of the lens was a result of impaired nutrition caused by the associated affections of the uveal tract.[1] In sixty consecutive cases of incipient cataract between 42 and 82 years of age, occurring in private practice, it was shown that in upward of 50 per cent. there was noted a clear history of weak eyes and long-standing asthenopia, often reaching back into early life. Chorioiditis in varying degrees of severity, with vitreous opacities, is noted, and in most instances carefully described in one or both eyes in 60 per cent. of the cases. In the remaining 40 per cent. no note is made of the intraocular conditions, or the opacity was too far advanced to permit ophthalmoscopic study of the fundus, but in many of these the intraocular disease was rendered probable by the weak and irritable eyes, asthenopia, and the chronically injected or inflamed extraocular membranes,—that is to say, there was present undue sensitiveness to light, headache, and increased lachrymation. The conjunctiva of the lids was injected, the caruncles swollen and red, while the episcleral and anterior perforating vessels were full and tortuous, indicating unmistakably the pathological processes progressing within the eyeball.

In a word, in these sixty cases of incipient cataract applying consecutively for relief and presenting all stages of advancement in one or both eyes, there could be no doubt as to the relation of cause and effect between the advancing opacity of the lens and the attending pathological conditions of the uvea. This view was furthermore con-

[1] Incipient Cataract: Its Etiology, Prognosis, and Treatment. By S. D. Risley, UNIVERSITY MEDICAL MAGAZINE, March, 1889.

firmed by the fact that in many of these patients no sooner had the opacity sufficiently advanced to exclude the light from the eye and thus prohibit its use than the external irritation and asthenopia more or less rapidly subsided.

That the lens and vitreous body should undergo degenerative changes in an eye the subject of pathologic processes affecting its food-bearing membrane should not cause surprise, since it should be anticipated that these avascular structures would quite naturally be the first to suffer from impaired nutrition. We are accustomed to witness opacity of the lens as a sequel to violent forms of disease involving the uveal tract, as in plastic irido-cyclitis, detachment of the retina, and absolute glaucoma, in all of which it is very liable to occur as the closing scene in these destructive processes.

That less vicious forms of uveal disease may also be influential in leading to impairment of the nutrition of the lens and causing it to become opaque and that the gouty rheumatic diathesis are among the most frequent causes of these chronic subacute forms of disease affecting the uvea is the contention of this paper. I suppose that no one will be found to question the clinical fact that these important dyscrasiæ are second only to syphilis in causing iritis and irido-cyclitis, especially in their recurrent forms. But any careful study of individual cases will reveal the fact that the entire chorioidal tract is more or less seriously involved in every case. Indeed, it not infrequently happens that the acute recurrences of iritis are preceded by a lighting up of the deeper chronic and progressive chorioiditis under exacerbations of the rheumatic or gouty diathesis. That many of these exacerbations never result in iritis, but are manifested by asthenopia, slightly increased impairment of vision, and tender eyeballs is doubtless true, but each attack disturbing more and more profoundly the nutrition of the eyeball. Such attacks are often attended with transient increase of tension, a steamy cornea, and foggy vitreous body. When examined with a magnifying glass this want of transparency in the vitreous is seen to be due to a fine granular or sand-like deposit, which clears up as the attack passes off. Under repeated exacerbations web-like opacities finally form which float more and more freely as the vitreous degenerates and loses its normal consistency. The nucleus of the lens becomes more and more plainly outlined and the lens-substance more strongly reflecting. In many cases banks of opacity form in the periphery from which spicules of opacity sooner or later project along the capsule towards the pole.

The following case, in which the cataract was but one of the phenomena in a long chain of symptoms depending upon the diath-

esis under discussion, will serve to illustrate the group of cases I have in mind. Mrs. S., aged 62 years, consulted me in 1884, complaining of recurring attacks of headache, during which she was unable to use her eyes. During these attacks the eyeballs were tender to palpation, there was increased lachrymation and undue sensibility to light. Retiring at night in her usual health, she would rise in the morning with an exacerbation of her ocular disturbance and headache, which was frequently attended with tinnitus, impaired hearing and foggy vision, the latter often so marked as to make reading not only painful but difficult. At her first visit $V=\frac{6}{vii}\frac{1}{2}$ with glasses which corrected a low grade of hypermetropic astigmatism. The pupils dilated medium only, under homatropine. The lenses were strongly reflecting and a few opaque spicules were present in the lower and inner periphery of each. The retinal arteries were relatively small and had gray borders near the optic nerve. The veins were relatively large and dark with gray outline in places, and in others granular borders. The chorioid was honey-combed, while yellowish spots and splotches were distributed throughout the eye-ground, but were larger and more numerous in the region of the macula and between it and the temporal border of the nerve. The details of the fundus were slightly blurred, but careful study with + 8 behind the ophthalmoscopic mirror showed the anterior part of the vitreous filled with a fine sand-like deposit.

She became short of breath on exertion, and observed that this had slowly increased during the past year or two. There were no heart murmurs, but she had a high tension pulse and rigid but not stiff radial arteries. The specific gravity of the urine was 1.028, and was loaded with uric acid, which crystallized on standing, but no albumin or sugar were present. She was subject to frequently recurring redness and tenderness of the joints and chalky concretions were forming in the fingers of both hands. There was a clear history of gout on the paternal side for three generations. I have watched the gradual advance of all these conditions since 1884. The sclera have become more rigid, the pupils now dilate but little under a mydriatic, the spicules have slowly advanced in both anterior and posterior cortex, and the anterior capsule has become gray and streaked, with here and there grayish-white spots of opacity apparently lying just beneath it. The nucleus of the lens is plainly outlined and with a convex glass is granular in appearance. Opacities float freely in the vitreous with every movement of the eye, and vision has fallen to $\frac{1}{5}$. To all appearance she is now the victim of rapidly maturing cataract. The present state has been reached by frequently recurring exacer-

bations of mild gouty attacks. Many times the eyes have escaped, the attack falling upon the joints, but frequently the eyes alone suffered, sometimes one, but often both at the same time.

The vision has often fallen below the usual average, and the vitreous would be found filled with a granular *débris* and web-like opacities which, under the local instillation of homatropine, and the administration of drugs internally, mild catharsis, baths, and careful diet, would slowly clear up and vision rise to its usual standard. The vitreous opacities now float with much greater freedom than formerly, a fact indicating the increased fluidity and disorganization of the vitreous.

In the mean time the radial arteries have become atheromatous, while the ability to take exercise has slowly diminished, until she has been compelled to seek a bedroom on the first floor to avoid ascending the stairs.

The failure of vision, consequent upon the opacity of the lens and vitreous, now makes it impossible to read except large type. She has, in a word, arrived at the stage of cataract at which many of our patients first seek advice, but this patient was one of those who frequently sought relief from her eye and ear discomforts, so that I have had the unusual opportunity of tracing the steady course of her disease through many years. That her case presents an unusual history, however, I do not believe. I am led to this conclusion by the very frequent association of cataract with the other groups of symptoms characteristic of steadily advancing lithemia. This frequent association is manifested by the careful search for general vascular disease and renal affections made by the ophthalmic surgeon in every case of cataract, first applying for relief, before operation is advised. It is probably true that this is done rather in the interest of a careful prognosis than to establish any pathological relation between the disease in question and the occurrence of the cataract, but I am convinced that the opacity of the lens should be viewed as one of the protean manifestations of the general disease. Although it may not be possible to trace the degeneration of the lens fibres directly to the presence of uric acid or its salts in the nutrient fluids which surround it, it is highly probable that its nutrition suffers impairment through the disease of the membranes upon which it, in common with the other ocular tissues, depends for suitable pabulum.

That the nutrition of the lens should suffer in the presence of this diathesis is rendered at least probable by several considerations other than those already adduced. It is, in the first place, to be expected that what may be termed the unstable equilibrium of the component transparent cells of the lens would be readily disturbed, as others

have pointed out, by qualitative change in its environing fluids. For example, it is well known that the entrance into the tissues of the frog of rapidly diffusible substances, as chloride of sodium, naphthalin, and sugar, disturb the transparency of the lens, presumably through some change in the normal osmotic qualities of the fluids in and around the lens. I have, in three instances, seen curious and interesting changes suddenly occur in the refraction of diabetic patients during acute exacerbations of their disease presumably due to changes in the lens, which once more resumes its normal state when the great excess of sugar had disappeared from the urine, and presumably also from the tissues.[1]

It is probable, having these observations in view, that the change in the density of the tissue fluids was sufficient to disturb the physiological relation of osmosis in the lens fibres, and thus lead to the observed changes in the refraction of the eye. If this can occur in saccharine diabetes, why may not a similar change be produced by the accumulation in the blood and fluids of the tissues of lithic acid and its salts. While the lens may recover from a single disturbance, as noted in the two cases of diabetes mentioned above, it is highly probable that permanent degeneration would ensue upon repeated exacerbations or if the lens were steadily bathed in an abnormal nutritive fluid. The excess of uric acid salts in the serum in the rheumatic or gouty diathesis may be and doubtless is sufficient to disturb the nutritive equilibrium in all the organic cells, but would fall with especially disastrous results on the unstable transparent cells of the lens and vitreous body. The amount of uric acid in the gouty blood may, according to Gerrod, reach .11 grain in 1000 grains of serum. Furthermore, it is a significant clinical fact, as bearing upon the conclusion of this paper, that the ectodermic structures of which the lens is one, and the connective tissue in and about the joints where it is most dense and comparatively avascular, and, therefore, where nutrition is most easily retarded, are precisely the localities which suffer earliest and most constantly in the evolution of gout.

That the existence of advanced atheroma adds to the risks of operation for cataract is unquestionably true. This was demonstrated in the case of an aged woman, already published, the subject of advanced atheroma, blind with overripe cataract in both eyes. The usual section was completed, but before the next step in the operation could be taken, she cried out with violent pain in the occiput. The lens was forcibly extruded from the wound and was followed immediately by a profuse gush of a yellowish vitreous fluid, and this by a

[1] Transactions of the American Ophthalmological Society, for 1897.

stream of bright red blood, so copious as to run over the face and saturate the pillow. The brittle intraocular blood-vessels had ruptured under the removal of their usual support, afforded by the ocular tension, which was suddenly disturbed by opening the anterior chamber. The eye was of course lost, but what is of more significance in this discussion is the fact that a month later she became the victim of a fatal intracranial apoplexy.

FRACTURE OF LATERAL VERTEBRAL PROCESS; RESULTING SCIATIC AND OTHER PAINS; OPERATIVE CURE.[1]

By John K. Mitchell, M.D.,

Philadelphia.

Mrs. D. was referred to Dr. S. Weir Mitchell by Dr. H. S. Buswell, of Buffalo, in April, 1896, when the following notes were taken:

Her age is 37 years; she was married at 22 and is the mother of two sons, aged 8 and 10 years. She has always been a nervous and excitable person, readily overwrought, and when thus upset, losing appetite, though always sleeping well. She was the head of her father's house from the age of 12, when her mother died in childbed; and as menstruation began at this time, the combination of responsibility with physical strain told upon her health. She was employed as a book-keeper for four years before her marriage. An increasing deafness annoyed her, and she suffered with what she describes as "a sensitive spine," a condition which grew worse after an attack of typhoid fever in 1890 and an accident in 1891, when, in moving suddenly backward to escape an exploding rocket, she stepped into a post-hole and received a wrench of the back. The spine, especially in the lumbar region, has been very tender ever since; the sciatic pains grew so severe as to suggest an operation for stretching the more painful nerve,—the right,—which was done without relief. Occasionally the legs twitch or draw up and then shoot out, without her volition, and accompanied by agonizing sciatic pains. These spasmodic seizures have, of late, been the most prominent cause of complaint. They occur with certainty if she lies on her back, oftenest in sleep, but sometimes when awake. For example, on the day of the examination five such crises of pain had taken place between eleven o'clock at night and four in the morning. For months past

[1] Read before the College of Physicians of Philadelphia, March 3, 1897.

she had not lain down at night, in the endeavor to avoid these attacks, but has slept erect in a chair, packed with pillows and arranged so as to allow her to lean a little to the left of the perpendicular position,—the posture which gives her the most ease. To rise, to bend, especially to the right, to stand upon the right foot, to walk on hard pavements or upon an uneven surface causes distress in the lumbar and cervical regions as well as in both sciatic nerves, the right suffering the most. She is apprehensive, rather discouraged, fatigued by slight mental exertion, and eats almost nothing. The bowels are constipated, and at times she has a flatulent indigestion.

Examination.—The patient is slight, though not very thin; exceedingly pallid, with a dead-white pallor; her hair is very gray, but thick. The skin is dry, harsh, rigid or thickened in parts, notably on the thighs, and covered with large, branny scales, especially on the face and legs. She never sweats at all. The thyroid gland is somewhat hard and wider than normal. There is no anesthesia. The station, when once she has with great caution and slowness brought herself to an upright position, is perfect.

The knee-jerks are both diminished, especially the right, and are both reinforcible.

There is no tenderness along the sciatic tracks. The pupils respond naturally to light and to accommodative effort.

The optic disks are pale; no hemorrhages can be detected.

There is no uterine trouble, and menstruation is regular and only rarely painful.

A study of the blood gave red corpuscles, 2,519,700; poikilocytosis very marked; no increase of white corpuscles; hemoglobin, 45 per cent.

The urine, which had been repeatedly examined by Dr. H. S. Buswell with negative results or with the discovery of a slight trace of albumin, due to a few pus-corpuscles, was several times studied without the disclosure of any further abnormality.

The patient's difficulty in lying down; the necessity of extreme deliberation and care in every movement; the natural apprehension with which, although courageous enough, she regarded the process of palpation, made days elapse before it was possible to get even a tolerably satisfactory examination of the spinal region. When it was done, there was nothing very new developed. There was much general rigidity, evidently, we thought, due to muscular tension and not to any osseous formation. The cervical tenderness described by the patient was somewhat diffuse in that area and not very severe, but from the waist down the whole spinal region was frightfully sensitive; and on the right side, in an ill-defined position at the level of the

third and fourth lumbar vertebræ, was a spot so exquisitely tender that it could really not be touched without forcing the patient to cry out in agony. No disturbance of sensation other than this extreme sensitiveness to touch could be discovered.

Even after some weeks of study and careful observation of the patient the questions of diagnosis suggested remained very perplexing. The possibility that the whole disorder was hystero-neurasthenic in its origin naturally presented itself for consideration. The patient had had various nervous strains, had always been excitable, had suffered with the common hysterical disorder so often described by the sufferers as a "sensitive spine;" yet she made the personal impression of a person of courage and self-control, although suffering from a most nerve-racking amount and constancy of pain and much worn by the lack of sound sleep, which was impossible in the constrained position in which she spent her nights and days. The changeability, the day-by-day withdrawal or addition of new symptoms, which one learns to regard as cardinal points in hysteria, were never noted in her. The leg- and spine-pains and the twitching were a little better or a little worse one day and another, but never were absent or very greatly increased except by movement or handling. Again, the contraction and sudden extension of the legs occurred most frequently during sleep, or if when awake, rather when she was quite relaxed than when attention was directed to the lower limbs.

The hardened and slightly enlarged thyroid, especially considered in connection with the harsh, dry, thickened, and scaly skin, and the absence of sweat-secretion, further complicated the case with suggestions of a myxedematous disorder.

The distinct lessening of the knee-jerks might point to some chronic spinal disorder; but the same diminution is a common result of sciatica, whether of the neuritic or less severe neuralgic type; and, moreover, the patient's station was perfect and the sensibility in all forms unaltered except for the tenderness of a limited area in the lumbar region.

It seemed not impossible that there might be a growth, perhaps carcinomatous, pressing upon the anterior or antero-lateral portion of the spinal column and thus irritating the nerve-roots; but how was this to be reconciled with the long duration of the trouble and with the decreased knee-jerks, and how account for the skin condition?

Final judgment had to be suspended while the obvious indications for treatment afforded by the very low percentage of hemoglobin in the blood, the diminution in number and altered shapes of the red corpuscles, the exhausting sleeplessness, the lack of appetite, and the general malnutrition were met. Meanwhile the pelvic

region and uterine organs were minutely examined by Professor C. B. Penrose with wholly negative results.

Iron was ordered in full doses; massage was given, with great difficulty, owing to the pain caused by any manipulation involving movement of the legs, but its careful application slowly improved the nutrition; small doses of a mild hypnotic secured better sleep, and after some weeks the patient was able to lie down in bed for a part of the time. Small quantities of morphine were given during the latter weeks of treatment, more to lessen the general irritability of the nerves than to cover up the pain. Her general condition gradually improved. The state of the skin grew notably better and the return of slight sweat-secretion was hailed with joy by the patient; but the violent convulsive movements of the legs lessened very little until about two months had elapsed. The area of tenderness remained as sensitive as ever; and, finally, when the whole doubtful case had been laid before the patient and her husband, they consented to the exploratory operation which Dr. J. William White, after careful examination of the patient in consultation with Dr. Weir Mitchell and myself, recommended.

Dr. White's account of his opinion and successful operation is as follows:

"The nature of Mrs. D.'s accident, taken in conjunction with her symptoms, seemed to me to point to trouble on the right side of the spinal column, in the region of the lower lumbar vertebræ. I was led to this conclusion by observing her attitude in different positions. There was no suspicion that the symptoms were feigned; besides, if it had been an imaginary disorder, she could not have had the information which enabled her constantly to relieve the injured portion of the spinal column, as she invariably did. The paroxysms were brought on by certain motions of the body. The slightest jar to the bed, for example, would cause her to scream out from the acute pain which was thereby induced.

"The attitude assumed by the patient in different positions helped, as stated above, to locate the seat of the trouble. She was able to lie on the right side comfortably. In standing, the weight was borne on the left foot. Both of these positions caused a lateral curvature of the spine, with the convexity towards the right side, which increased the distance between the right borders of the adjacent vertebræ.

"Any motion which caused the spine to assume a convexity in the opposite direction, as lying on the left side or standing with the weight on the right foot, and which therefore approximated the right borders of the adjacent vertebral surfaces, instantly caused agonizing

pain, which was invariably located slightly to the right of the median line, in the lower lumbar region.

"New growth, osteo-periostitis, and pachymeningitis in the same region could not possibly be differentiated. In consultation, an operation for the purpose of discovering and removing, if possible, any cause of pressure upon the nerves that made their exit in that region was decided upon.

"The operation was performed May 29, 1896. The patient was placed in the prone position, with a folded pillow under the abdomen, in order to make the lumbar spine more prominent. An incision about four inches in length was made in the middle line, over the spinous processes of the third, fourth, and fifth lumbar vertebræ. The muscles were dissected loose from the right side of the spinous processes, in order to permit ocular and digital examination of the region. Nothing could be seen that accounted for the symptoms. The muscles were then dissected from the corresponding position on the left side, but no lesion was found. I then turned my attention again to the right side, and, inserting my finger along the lateral aspect of the superior articular process of the fourth lumbar vertebra, in order to reach the intervertebral foramen, which gives exit to one of the nerves of the lumbar plexus, the tip of my finger touched a piece of rough bone, which was found to be a portion of the last-named process that had been broken off and displaced forward. Enough periosteal attachment remained to prevent necrosis of the fragment, which was still ragged and angular. This was removed partly with the gouge and partly with the curette, care being taken not to injure the nerve. A further examination of the contiguous processes revealed nothing abnormal.

"The wound was then closed with silkworm-gut sutures, a single narrow strip of iodoform gauze having been introduced for drainage. The gauze was removed at the first dressing. The wound ran a sterile course and was firmly healed at the end of two weeks. The patient left the hospital on June 14.

"It was apparent at once that the trouble had been removed at the operation. The following day the patient's bed could be shaken vigorously without causing her any discomfort, although she had formerly experienced agonizing pain upon the slightest motion of the bed. The morphine which she had been getting before the operation on account of the pain was gradually reduced and entirely withdrawn on June 13.

"The stitches were removed on the 10th and the patient was up in a chair for an hour on the 12th, having experienced no discomfort either in sitting or moving from the bed to the chair and back. At

no time after the operation was there any indication of the former pain, and the motions which were agonizing before could be made with impunity."

While we were confident that some injury to the cord or the spinal nerves would be found, I believe it is exactly true to say that no one of the several consultants had any idea of fracture's playing any part in the production of the symptoms from which the patient suffered. The mechanism of the occurrence of this fracture as described by the patient was curious. It is, of course, possible that in the lapse of several years the order of the occurrence may not have been exactly remembered; but she suffered a good deal of pain at the time, and so had it fixed in her mind. Stepping backward, as is noted in the history, she put her left foot in the hole left by the removal of a post, probably only six or eight inches deep. This threw her towards the left. In the effort to regain her balance she flung herself to the right, but her foot catching in the small hole she was thrown backward. It is likely enough that the lateral fall brought two adjoining processes violently together, and one was in this way cracked or broken, and its separation from the vertebral body completed by the further muscular effort to regain her balance. The jagged edges where the fracture had taken place were the cause of the violent irritation and the whole of the subsequent symptoms. A case not very dissimilar is within my knowledge, where a man, while coupling cars, was violently bent over sideways between two of them. His earlier local symptoms were almost identical with those which have been described in this case, but a myelitis finally resulted, from which he died. Dr. Weir Mitchell tells me that he once saw in Dr. Mütter's practice a young woman who was hurt by a blow between the shoulders, and who became consequently bedridden. On examination her spine showed an absence of the sixth or seventh dorsal process. Dr. Mütter, upon cutting down, found the broken process lying to one side, much eroded, but not having formed any abscess. The patient made an easy and complete recovery.

Wherever there is severe local spinal pain, if a history of an injury can be elicited, no matter how trifling or how remote in time, it must always be wise, with the present surgical means at our disposal, to make exploration for the cause in the manner in which we advised this patient. The history of the injury was, both in the patient's mind and in her description, less definite than it appears when written here; and a clear statement was only obtained after repeated questioning, when, probably, thinking about it had brought back the details. The exclusion of other possibilities left us finally with the supposition of some injury of the spine, whether from this

accident or from a growth no one knew or could know until the knife revealed its nature. I may add that I have within the last week seen the patient; and that she has made, considering her long period of invalidism and her previous history, what may be looked upon as a very complete recovery, no trouble remaining except an occasional sharp pain on performing certain movements, especially rising from recumbent and sitting positions, and a small amount of stiffness or awkwardness in the back muscles. Both these difficulties are probably due in part to long habit of pain, in part to the wound of the operation and the resulting cicatrix.

GLANDULAR FEVER.[1]

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Glandular fever, described by Pfeiffer[3] in 1889, has not received very wide-spread attention, and seems to have been especially neglected in this country. It is for this reason, and in the hope that I may stimulate some interest in a subject which seems to be deserving, that I offer this communication.

Pfeiffer described this condition as an infectious disease occurring in children of from 5 to 8 years of age, with high fever (39° to 40° C.), pain in all the joints and great restlessness, sometimes vomiting, and all without especial cause. Coryza and slight cough sometimes existed, the fauces were a little red, and the bowels constipated. The act of swallowing as well as movement of the head gave rise to pain in the neck. Examination revealed from several to many lymph-glands in the whole circumference of the neck, but especially at the posterior border of the sterno-cleido-mastoid and in the nape of the neck, distinctly enlarged and painful. They were first observed on one side, but had usually developed to some extent on the opposite side by the following day. The overlying skin was normal. In the milder cases the fever disappeared on the second day, and there remained only a certain amount of stiffness of the neck and the enlarged and painful glands, which gradually subsided.

[1] Read before the Philadelphia Pediatric Society, March 9, 1897.

[2] Dr. A. E. Roussel presented a communication on this subject to the Philadelphia County Medical Society, a few weeks after this paper had gone to press.

[3] Jahrbuch für Kinderheilkunde, Vol. xxix, p. 257, 1889.

In the more severe cases much the same symptoms manifest themselves, but are more decided and of longer duration; the fever sometimes continuing from five to eight days. The spleen and liver may be enlarged.

Protassow[1] calls attention to the fact that prior to the appearance of Pfeiffer's article, N. Filatow, of Moscow, described in his clinical lectures a disease of the cervical lymph-glands which closely accords with the above. His description was as follows: "An acute idiopathic swelling of the lymph-glands lying before the upper border of the sterno-cleido-mastoid muscle between the auricle and mastoid process and behind the angle of the lower jaw, which is accompanied by high fever. It attacks children from 2 to 4 years, and sometimes also older ones. It depends upon no local process in the head, throat, or ear, whereby it is easily differentiated from the symptomatic glandular swellings. During the first seven days the disease assumes the form of an acute adenitis. The glands may reach in the course of three or four days the size of a walnut, or even larger. They are firm, elastic, and extremely painful to the touch. The overlying skin is somewhat red and stretched, but not edematous. From five to ten days from the beginning of the disease the fever leaves. The tumor remains about the same for a few days and then gradually disappears. In two or three weeks the child is normal. Suppuration is rare, having been seen in but one case." Filatow,[2] in his text-book published in 1892, gives a brief space to the consideration of glandular fever as described by Pfeiffer. That he inclines to the belief that Pfeiffer was dealing with the condition he described as above is evidenced by the fact that he emphasizes the decided resemblance between these two conditions, and cites Heubner's[3] cases, in which suppuration occurred, as weakening Pfeiffer's claim that suppuration does not occur. He furthermore thinks that Heubner's nephritic cases suggest an unrecognized scarlatina. Dr. N. Korsakoff,[4] also of Moscow, in 1888, the year before Pfeiffer's paper appeared, described a special form of glandular swelling occurring after scarlatina, at a time when the child had reached a state of perfect health. "It frequently precedes a nephritis. Some days before the appearance of the nephritis the patient complains of pain in the neck, posterior to the auricle and below the mastoid process, where a swollen lymph-gland often appears. The pains are so severe that the head is moved with difficulty. In some cases the region is painful to touch only."

[1] Zur Casuistik des Drüsenfiebers, Jahrbuch für Kinderheilkunde, Vol. XXXII, 1891.

[2] Semiotik und Diagnostik der Kinderkrankheiten, Stuttgart, 1892, p. 381.

[3] Jahrbuch für Kinderheilkunde, Vol. XXIX, p. 264, 1889.

[4] Mediciskol. Obosrenii., No. 22, 1888, Moscow (quoted by Protassow).

In most cases the condition is bilateral; sometimes it appeared first on one side, the other being later involved. The new extension causes a new rise in temperature. "The first symptoms of the nephritis occur three or four days after the beginning of the disease." In some of his cases nephritis did not complicate the condition. The appearance of glandular swelling always served to rouse the suspicion of an approaching nephritis. Korsakoff also refers to the form described by Filatow, and remarks that "it frequently appears in Moscow." It is possible, as Protassow suggests, that Filatow and Korsakoff may have had under consideration the same disease that Pfeiffer has described,—certainly one of a very similar nature,—but neither of them refers to it as of an infectious nature. Filatow, in his text-book, says that in one instance only has he seen two members of the same family affected.

Pfeiffer did not claim in his paper to be the discoverer of a new condition, but rather suggested that he was describing a well-recognized set of clinical symptoms which, up to that time, had been absolutely neglected in the text-books and compendiums relating to the diseases of childhood. The question of the priority of recognition of this set of clinical symptoms, therefore, is not of much importance. To Pfeiffer, however, is due the most credit for having brought the subject more prominently before the medical world, and it is his description that has been responsible for all the work that has since been done on the subject.

While the contributions to the literature since the time of Pfeiffer's article have not added much to our knowledge of the condition, there has been sufficient to justify an attempt at a new and more comprehensive description of the subject, based upon a review of the facts contributed, and to that purpose this paper will be devoted.

Glandular fever may be defined as an infectious disease of sudden onset and short duration, occurring in children, without premonitory signs, and attended by constipation, mild faucial redness, high fever, rapid swelling, and great tenderness of the cervical lymph-glands lying beneath and posterior to the upper third of the sterno-cleido-mastoid muscle, the latter subsiding gradually and completely in from two to three weeks.

Etiology.—As to the etiology of the disease nothing very definite can be said. It is generally considered as of an epidemic infectious nature.

Von Starck[1] noticed a pre-existing chronic constipation in all his cases, and from this fact and because one constantly sees various

[1] Jahrbuch für Kinderheilkunde, Vol. xxxi, p. 454, 1890.

and marked symptoms in both adults and children as a result of the absorption of toxic agents in this condition, he believed glandular fever to be a toxemia dependent upon the constipation.

Sejournet[1] is also inclined to the belief that glandular enlargements occur as a result of auto-infection from the gastro-intestinal canal, and explains the infection of children and the exclusion of adults by the greater activity of absorption and of the lymphatic circulation in young subjects.

Dawson Williams,[2] in this connection, has recently called attention to the observation of Surgeon-Major Skinner:[3] "that the non-venereal buboes which he had seen invariably occurred in the inguinal glands, and as the patients always had irregular action of the bowels, sometimes dysentery and again constipation, he thought the enlargement of the inguinal glands possibly due to secondary infection from the mesenteric glands."

Early life is a decided predisposing cause. Pfeiffer found it most common between 5 and 8 years; Neumann[4] and Comby[5] almost exclusively in the first two years of life; Park West,[6] between the ages of 7 months and 13 years, and he says that in infected families where there were children under 7 months or over 13 years, in no case did they contract the diseases. In his ninety-six cases, forty-one occurred during the first 5 years, and forty-seven between 5 and 10. Fifty-nine cases noted from the literature, exclusive of those of Park West, in which the age was mentioned, showed a variation between 10 weeks and 16 years; there were twenty-nine occurring in the first 5 years, and eighteen between 5 and 10 years. Hoerschelmann,[7] Rembe,[8] and Czajkowski[9] report each one case occurring in adult life.

Boys are more commonly affected than girls. In Neumann's cases there were nineteen boys and eight girls; in Park West's fifty-three boys and forty-three girls; and in fifty-nine other cases in which the sex was given there were thirty-seven boys and twenty-two girls, making a total of 109 boys and seventy-three girls.

Exposure to cold seemed directly responsible for the condition in cases reported by Heubner, Protassow, and Comby. It is prevalent

[1] Médicale du Nord-Est, 1891, Vol. xv, p. 145.

[2] Lancet, January 16, 1897.

[3] British Medical Journal, January 9, 1897.

[4] Archiv für Kinderheilkunde, Vol. xv, 1893, p. 339, and Berliner klinische Wochenschrift, December, 1891.

[5] La Médecine infantile, No. 1, January 15, 1894.

[6] Archives of Pediatrics, December, 1896, p. 889.

[7] Jahrbuch für Kinderheilkunde, Vol. xxxviii, 1894, p. 14.

[8] Der Kinder Arzte, November, 1894.

[9] Gaz. bek. Warszawa, 1894, Vol. xiv.

during the months in which diseases of the upper air passages are most common.

Neumann commented upon this tendency, and expressed the belief that in certain years there existed a disposition towards idiopathic glandular disease.

The distribution of Park West's cases was as follows: One in September, twenty-three in October, thirteen in March, twelve in February, twelve in November, eleven in January, ten in May, eight in December, and six in April.

Pre-existing measles (Heubner, Moussous),[1] scarlet fever (Rauchfuss,[2] Korsakoff), pertussis (Comby), and influenza (Rauchfuss, Hoerschelmann), have been noted, and it is possible that they may have prepared a favorable soil for the development of the infection.

Mode of Infection.—The disease, as has been said, is of an infectious nature. The essential pathological lesion, so far as our knowledge goes, is an enlargement of one or several of the cervical lymph-glands lying beneath or posterior to the upper third of the sterno-cleido-mastoid muscle; in other words, the upper deep cervical set. Unfortunately the bacteriological examinations have been few in number and incomplete. The nature of the infection, therefore, remains in question. In seven of Neumann's suppurative cases bacteriological examinations of the pus showed the streptococcus pyogenes in all, five times alone and twice associated with the streptococcus albus. From this result he considers the streptococcus responsible for the condition.

Desplats[3] reported two cases occurring in the same family, in one of which there existed a pseudo-membranous angina of streptococcal origin. In my own case cultures made by Dr. Kneass from the tonsils and pharynx showed streptococci and staphylococci. Comby and Gourichon, basing their opinions chiefly upon the result of Neumann's examinations, incline to the belief that the disease is of streptococcal origin. Uffelmann[4] accords with this view.

It is interesting in this connection to reflect upon the view expressed by Czajkowski that the disease is only a manifestation of influenza. This is based upon bacteriological examinations of the blood, which showed the presence of the influenza bacillus in all of his cases. However, his observations have never been confirmed, and, inasmuch as his cases occurred during an epidemic of influenza, it is possible that this finding was coincidental.

[1] Revue Mensuelle des Maladies de l'Enfance, June, 1893.

[2] Jahrbuch für Kinderheilkunde, Vol. XXXI, 1890.

[3] Journal des Sciences Médicales de Lille, No. 31, August 4, 1894.

[4] Kinderheilkunde, Wien und Leipzig, 1893, p. 281.

There is no other report of an examination of the blood in the literature as far as it has come under my observation. It suggests itself that it would be of great interest, in the light of a certain analogy, between this condition and the so-called bubonic plague—the early decided weakness, the painful and tender glandular enlargement occurring on the second day, sometimes leading to suppuration, and the tendency to hemorrhagic nephritis—that careful bacteriological examinations of the blood and tissues should be made in the hope of discovering here the micro-organisms and of possibly establishing an etiological relationship between these two conditions through infection by the same bacillus—in the case of glandular fever rendered less toxic by atmospheric or individual conditions. The blood examination is feasible, but, owing to the infrequent fatalities, the opportunities for studying the glandular tissues are very rare.

In the light of our present knowledge we are forced either to consider the nature of the infection as unsettled, or to accept the streptococcus pyogenes as the causative factor. In the light of the limited number of observations the former position seems the safer.

Whatever the nature of the micro organism, its mode of entrance must be considered.

In the majority of cases there has existed either a mild coryza or light faucial redness, and Moussous thinks that in those cases in which it has not been noted it may be taken for granted that such a condition has preceded the acute manifestations. He believes that some one of these inflamed areas serves as a port of entrance for the micro-organism. In this view he is supported by the majority of observers.

The deep upper cervical lymph-glands, from ten to sixteen in number, are situated at the bifurcation of the common carotid and along the course of the internal jugular vein. They receive lymphatic vessels from the lower part of the pharynx, the larynx, the palate, the tonsils, part of the tongue, and part of the nasal fossa. These vessels are especially developed at the base of the pharynx, where, according to Waldeyer (quoted by Gourichon), the closed follicles form a lymphatic ring. Gourichon[1] thinks it natural, therefore, to seek the origin of the acute upper deep cervical adenitis in the throat. This extensive communication between the glands in question and the upper air-passages certainly offers a wide portal of entrance. The existence of cryptogenetic infection is no longer disputed. It has been shown by Dobroklonsky, for instance, that the tubercle bacillus can penetrate the intestinal mucous membrane and develop lesions in the mesenteric glands without causing any lesion

[1] Gazette hebdomadaire, 1896, and Thèse de Paris, 1895.

of the intestine. Schlenker,[1] in like manner, has shown that Koch's bacillus is capable of penetrating the tonsils and giving rise to tuberculous adenitis of certain cervical glands without involving the tonsils. The tuberculous bronchial glands, which are so frequently met with on the post-mortem table, often exist without discoverable lesions elsewhere. There seems, therefore, no reason why similar infection should not occur in the case of glandular fever.

Symptomology.—Prodromes rarely exist; in a few instances they have been noted. The onset is sudden, initiated by a chill or sense of chilliness. Vomiting and pain in the joints frequently exist and high fever—101° to 105° F.—is constant. The patient is restless, there is decided weakness, anorexia, and headache. The tongue is coated and the bowels constipated. In mild cases observed by Park West diarrhea existed, and in his severe cases convalescence manifested itself by a discharge of thin greenish feces mixed with mucus. The head is held fixed, and sometimes in the position of torticollis swallowing and movement of the head give rise to pain. In a case of Protassow's this was so decided that the child cried out in agony when the head was moved. There is sometimes only a sensation of scratching in the throat, and in Park West's cases when the children were old enough they complained of a choking or tight feeling in the throat on a level with the top of the larynx. On the first or second day there develops rapidly increasing swelling of one or several of the lymph-glands lying beneath or posterior to the upper third of the sterno-cleido-mastoid muscle. This occurs first on one side,—in thirty-four cases the left and in thirty-six the right,—and usually by the following day the glands of the opposite side have begun to swell. In thirty-six cases the disease was unilateral. The enlarged glands vary in size from that of a pea to that of a goose-egg (Neumann). They are painful and tender to the touch.

Aside from the glands described there has been noted enlargement of the lymphatics in the entire circumference of the neck, the submaxillary and sublingual salivary glands, and the parotid (Czajkowski), the axillary and inguinal (Protassow, Desplats, Park West). The painful deglutition, abdominal pain, and paroxysmal cough are accounted for by a probable swelling of the retropharyngeal, retro-esophageal, mesenteric, retrotracheal, and bronchial glands. The mesenteric glands have been frequently palpated, and in West's epidemic they were enlarged in thirty-seven cases.

Moussous reports a case of interest in connection with the involvement of the tracheal and bronchial glands, in which there existed discomfort in the chest and in its posterior portion, localized

[1] Virchow's Archives, Vol. CXXXIV.

pain, paroxysmal cough, simulating pertussis, accompanied by congested face, vomiting, but without the inspiratory bruit and expectoration. The lung examination revealed at the right apex a higher-pitched percussion note, feeble vesicular murmur, and expiration a little harsh. Two days later the left apex showed the same signs. All signs and symptoms subsided within five days. The liver and spleen are very commonly enlarged. In Park West's cases, for instance, the liver eighty-seven and the spleen fifty-seven times.

The examination of the fauces usually shows a moderate degree of redness, occasionally decided angina. In a mild case of Protassow's he observed small pin-head hemorrhages on the tonsils and palatine arches, which disappeared after twenty-four hours. Hoerschelmann noted three or four small, white, pin-head spots on the tonsils, of two days' duration in two cases, and he and Comby each observed two cases in which several days after the beginning of the disease there occurred marked redness and swelling of the tonsils. Desplats is alone in having observed a pseudo-membranous angina.

The fever in mild cases falls on the second or third day. In the more severe cases it continues elevated from five to ten days. It shows very decided remissions, and in a case reported by Seibert[1] the temperature course suggested quotidian intermittent. The failure of quinine to influence it and the absence of malarial organisms in the blood cleared the diagnosis. Each new glandular enlargement causes a new rise of temperature. The fever usually falls with moderate rapidity. In von Starck's cases only one in twelve fell by crisis. Subnormal temperature usually succeeds the febrile course by several days, and during this time there is profuse sweating, depression, and pallor. Recurrences with renewed fever are frequent. Upon the fall of the fever the glandular enlargement begins to subside, and in uncomplicated cases gradually disappears in from ten days to three weeks. In a case reported by Rauchfuss there was extensive glandular swelling and a fever of 40° C. The fever disappeared on the second day, and in five or six days the glandular swelling had subsided. In one of von Starck's cases the enlargement continued four months. The glandular swelling usually first disappears from the side first involved. Instead of resolution occurring, the glands may suppurate.

Comby observed puffiness of the cellular tissue in the region of the involved gland in many of his cases. He reported in detail one case which terminated in suppuration on the tenth day, and remarked that he had "seen and incised many similar cases." Suppuration occurred in thirteen of Neumann's cases—once each on the third and

[1] New Yorker Medicinische Wochenschrift, July, 1891.

eighth days, six times from the tenth to the fifteenth day, three times from the eighteenth to the twenty-second day, and once five weeks after the swelling appeared. The usual duration of the disease is from nine to twenty-seven days.

Diagnosis.—Enlargement of the glands in the neck is so common that one would on first thought consider it difficult to make a diagnosis of glandular fever. If, however, one bears in mind its infectious nature, its sudden onset with high fever and decided weakness, the appearance on the second or third day of a rapid swelling with tenderness of the cervical lymph-glands lying behind and beneath the sterno-cleido-mastoid muscle in its upper third, first upon one side and later extending to the other, and all without any disease of the mucous membranes of the cavities of the head to account for the condition, it will be found comparatively easy of recognition.

Simple, acute, or idiopathic cervical adenitis in many respects closely resembles the condition, and doubtless the two are constantly mistaken for each other. Idiopathic adenitis is non-infectious. The extensive epidemic reported by West and the numerous family endemics communicated to the literature establish the infectious character of glandular fever. In addition to this, the usually more acute character and shorter duration, the involvement of the glands on both sides of the neck, and not infrequently in the entire cervical circumference in glandular fever with its tendency to involvement of the retropharyngeal, retrotracheal, bronchial, and mesenteric glands with enlargement of the spleen and liver and the frequent occurrence of early hemorrhagic nephritis, serve to differentiate it from idiopathic adenitis.

There is no resemblance between typical cases of mumps and glandular fever, but in the irregular cases in which the submaxillary glands are primarily involved it is possible to confuse the two conditions. Primary involvement of the submaxillary salivary gland is undoubted, but cases in which the parotid is not involved to some extent throughout the course of the disease and in which there is involvement of the cervical lymph-glands in general, if they exist at all, must be very infrequent. Alexander[1] refers to an epidemic under his own observation, in which "the inflammation and swelling were confined exclusively to the subauricular and submaxillary lymphatic glands, the parotids not participating to any appreciable extent, and yet that the disease was undoubtedly mumps was shown by its contagiousness and by the occasional occurrence of a typical parotitis during the course of the epidemic." He also refers to an epidemic of a similar nature observed by Penzoldt.

[1] Reference Hand-Book of the Medical Sciences, Vol. VIII, p. 384.

If we admit the correctness of these observations, the possibility of confusing the two conditions is increased.

In this connection it is interesting to refer to a form of glandular enlargement, cited by James Cantile[1] in his recent lectures on "The Spread of Plague," which he described as an idiopathic glandular swelling occurring in epidemic form among children in Hong-Kong. There was no involvement of the salivary glands, but he says of it "that for convenience it was called mumps by the medical men there, but they all admitted that neither the parotid nor the submaxillary gland was the seat of trouble."

In some of the reported cases of glandular fever involvement of the sublingual and submaxillary glands has been noted, and in a case of Hoerschelmann's there existed a double parotitis with maximum swelling on the sixth day. Czajkowski observed the salivary glands involved in many of his cases, the parotids, however, very exceptionally. These observations tend to still further increase the difficulty of differentiating between mumps and glandular fever. These, however, are exceptional cases, and one must make allowance for possible incorrect observations. Ordinarily the exclusion of mumps is comparatively easy. In parotitis the upper deep cervical glands are not involved, the tumor is less firm, the area of tenderness to pressure is limited to a very small space just beneath the lobe of the ear and to a point in front of the tragus, while in glandular fever the swollen glands are hard and tender throughout their entire area. In mumps there is no enlargement of the lymphatic glands in other parts of the body. The spleen and liver are never involved, there is no tendency to nephritis, and in mumps the glandular enlargement is of shorter duration, and the disease usually occurs after the third year of life, a period at which glandular fever is exceedingly common.

Of the symptomatic adenites, that of scarlet fever is the most deserving of attention. In those cases in which the rash is slight and the throat symptoms insignificant, the two conditions may be very similar, even resembling each other in the existence of a nephritic complication. I have under observation at the present time a boy of 8 years, who, two weeks prior to my seeing him, developed an acute enlargement of the deep cervical glands, first on the left side and later on the right. They reached the size of a chicken's egg, and were attended by high fever, which subsided in the course of a few days, after which the swelling began to disappear, first on the left and later on the right side. The swellings were painful to touch, there was no sore throat complained of, there was no difficulty in swallowing. The child had abdominal tenderness. The bowels were con-

[1] Lancet, January 2, 1897.

stipated. There had been no chill in the beginning of the attack and no initial vomiting, but the boy had been sore all over. At the time I saw him he had a mild general edema. The deep cervical glands were still somewhat enlarged to touch, the inguinal glands were slightly enlarged, but no enlargement of the liver or spleen existed. Inquiry developed the fact that a younger sister had been ill about the same time and that she had a rash which some "doctor" had diagnosed as "scarlet rash." Her throat had not been sore, she had had moderate enlargement of the deep cervical glands, which still existed to some extent. The rash lasted three days. At the time she was seen there was no desquamation, nor had there been. A babe of a few months old and two older brothers had not been ill. The question naturally arises as to whether the condition was really a scarlatina or whether the younger child had a scarlatiniform rash in the course of a glandular fever. Ordinarily the throat symptoms, the rash, or desquamation will enable one to determine the nature of the condition. The nephritis of scarlet fever is usually late to manifest itself.

Complications and Sequelæ.—By far the most serious and perhaps the most common complication of this disease is nephritis. It has been noted by Pombrak,[1] Heubner, von Starck, Rauchfuss, Neumann, Hoerschelmann, Soca, Schroeder, and Hesse.[2] It is invariably hemorrhagic in character, and usually manifests itself very early, the second day (Hesse) to the third week. In the late cases it usually develops during a recurrence of the glandular swelling. The urine is reduced in quantity, dark in color, cloudy, and contains from a small quantity to half its bulk of albumin. Microscopically, one discovers red and white corpuscles, blood, epithelial, granular, and occasionally hyaline casts. The duration of the nephritis is from ten days to four weeks. No fatal cases have been recorded. Hypertrophy of the left ventricle with acceleration of the heart's action occurred in a case of Rauchfuss's.

Skin eruptions sometimes occur. Heubner described a peculiar eruption which covered the breast and arms. It was a "symmetrical, quite active redness, which showed a sharp outline against the healthy skin, similar to urticaria spots." The rash disappeared and recurred several times during three or four days. Hoerschelmann described a fine, specked, elevated, red eruption on the breast, abdomen, nates, and back, which occurred on the eighth day. At a distance it suggested measles, but on closer examination it looked more like rubeola. It lasted two days. There was no scaling. Protassow observed a

[1] Med. Obozr., Moskau, Vol. XLIII.

[2] Jahrbuch für Kinderheilkunde, Vol. XLII, 1896.

rash which appeared on the second day. It was evident upon the body and extremities, and consisted of reddish, millet-sized, somewhat elevated, very itchy spots. It disappeared after two days. The case was otherwise typical, and a brother attacked at the same time had no rash.

Desplats saw a general rubeolar eruption of two days' standing, and Czajkowski observed two cases of localized erythema on the extremities.

In ten of Neumann's cases there existed two times acute, double, perforative, middle-ear disease; three times the same condition, unilateral, on the side of the affected glands; three times also on the opposite side; once a bilateral, tympanic catarrh, more marked on the side of the glandular swelling; and in one case there occurred an otitis media three weeks after the beginning of the disease.

Hoerschelmann also reported two cases of otitis media, one of which was trephined.

Neumann notes several cases of retropharyngeal abscess. Pertussis, broncho-pneumonia, scarlet fever, and bronchitis have been observed in the course of glandular fever.

Prognosis.—Complete recovery is the invariable termination.

Desplats reports one case in which death occurred during a relapse from a pulmonary complication, and Park West a fatal case in a delicate child convalescent from scarlatina.

Treatment.—Absolute rest, applications of iodine or iodine ointment, enveloping the neck in cotton, and the use of quinine by suppository with the salicylate of soda constitute the measures which have been resorted to. Park West has found that "small doses of calomel given during the height of the trouble seemed to lessen somewhat the depression that always followed."

Suppuration of the gland must be treated by free incision.—My own case occurred in a boy of 2 years, who had been previously healthy. His hygienic surroundings were ideal.

I first saw him on the evening of May 7, 1895, having been summoned because the mother had noticed a slight swelling on the right side of the neck below and behind the lobe of the right ear. This swelling—not extensive at this time—occupied a position in front of and beneath and posterior to the sterno cleido-mastoid muscle. It was tender to the touch. The throat was normal. The child was disinclined to move about. The temperature was 99.6° F. The bowels had been slightly moved in the course of the day. By the following morning the child had sickened decidedly. There were dark lines under the eyes, the face wore a pained expression, the head was held fixed but straight, the temperature had risen to 102.5°

F., and the swelling on the right side had increased considerably, and there was beginning swelling on the left side beneath the upper third of the sterno-cleido-mastoid muscle. There had been no vomiting, but the bowels had been moved as a result of small doses of calomel given on the previous day. The throat examination showed light redness of the arches, no swelling, no exudate. The child continued worse during the next day and night, and by the third day the temperature had risen to 104.3° F., and continued above 104° F. except for a period of a few hours, during which the child had sweat some. The swelling on the right side had increased still further, and the left side was almost as large as the right. The glands posterior to the border of the sterno-cleido-mastoid muscle had become involved, as well as the posterior cervical, and on the right side the submaxillary gland. There was some thickening of the cellular tissues on this side, giving rise to a boggy appearance resembling the adenitis seen in diphtheria.

The throat, larynx, and nasal passages were entirely free, with the exception of some redness and perhaps a little swelling of the tonsils. There was some cough, with difficulty in swallowing, which I was inclined to attribute to the rather tenacious character of the mucus present in the throat. The child seemed to be attempting swallowing to dispose of some foreign substance in the throat. The abdomen was distended but not tender. No enlargement of the spleen, liver, or inguinal glands was noted at this time nor later.

During the two following days the condition was very little changed, but by the morning of the sixth day the temperature had fallen to between 100° and 101° F., and the glandular swelling had lessened. In the three following days it fluctuated between 99° and 101.5° F., and the glandular swelling on the left side lessened decidedly. On the ninth day, with an increased elevation of temperature, there occurred a second rapid swelling of the gland on the right side, especially the upper deep cervical and submaxillary, accompanied by a corresponding elevation of temperature.

Examination of the throat at this time showed decided swelling on the right side, especially involving the peritonsillar tissues, which in appearance strongly suggested suppuration, and on palpation seemed almost to fluctuate. This had developed with extreme rapidity. By the following day it had subsided with almost as much rapidity as it had developed, the temperature had fallen to normal, with slight elevation in the evening. The glandular swelling, which had been persistently lessening on the left, had diminished much on the right. The child was very much depressed, pale, and somewhat emaciated. There was no further recurrence of the fever. The

glandular swelling gradually subsided, but was still slightly evident at the end of three weeks from the beginning of the attack. The bowels were constipated throughout. There were no complications or sequelæ.

Bacteriological examination of the throat made on the fourth day showed streptococci and staphylococci.

Two other children in the family were sent to the country on the second day and did not develop the disease.

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TYPHOID FEVER IN INFANCY AND CHILDHOOD, WITH REPORT OF THREE CASES OCCURRING IN A FAMILY EPIDEMIC.[1]

By Joseph M. O'Malley, A.C., M.D.

The occurrence of typhoid fever in infancy and early childhood has attracted considerable attention within the past two years, and though the opinion of the greater number of writers on the subject is that the disease is extremely rare during the first two years of life, and uncommon under 3 years of age, the statement of Dr. Benjamin Walker (in the *Lancet* in 1884) that typhoid fever in the early years of life is of sufficiently frequent occurrence to justify a review of progress at short intervals is, perhaps, as pertinent to-day as when it was expressed. The infrequency of the disease in early child-life will be granted, but that typhoid fever in early childhood is of far more general occurrence than the number of reported cases would

[1] Read before the Philadelphia Pediatric Society, April 13, 1897.

lead us to believe, I think will not be questioned, and the query of Dr. Bridges, in his article bearing on the subject in 1896, merits repetition. He asks, "If it is shown, as it seems to me it has been conclusively, that children under 3 years are immune to typhoid fever, can it not be that the disease is more common than is supposed, and is frequently overlooked? The common occurrence of continued fever with intestinal and bronchial catarrhs in infants and the general teaching that typhoid fever is not found in these subjects are apt to militate against a closer examination which might reveal typhoid fever more commonly."

With this idea in view I thought it would be of interest to report the following three cases in children occurring in a family epidemic of the disease. The family, consisting of father, mother, and three children, becoming infected about the same time, and the mother, who was ill with a mild infection, was delivered at term of a male child; labor occurring with a temperature of 101.2° F. and pulse 122.

Case I.—Mary H., white, female child of 3½ years, seen October 24, 1896. She had been complaining of feeling ill for a week; there was no history of diarrhea or epistaxis. On examination the abdomen was found tender and somewhat tympanitic, and rose-spots were visible, but spleen could not be palpated, the tongue was coated and dry, the child was apathetic and indifferent, but took nourishment well. Temperature in axilla was 104° F. and pulse 130. Two days later she was removed to St. Agnes's Hospital. Upon admission to the hospital her temperature was 103⅖° F.; pulse 128; respiration 36; from this time on her temperature was taken every two to three hours, and was typically typhoid in its characteristics. October 31 a second crop of rose-spots was again observed, but spleen could not be palpated. Her temperature reached the normal on the twenty-third day of the disease. Recovery.

Case II.—Catherine H., aged 21 months, sister of preceding case; attention was called to her on October 26, the child had been restless and irritable for a week previously, and had diarrhea and refused nourishment. She was removed to the hospital October 26, and on admission her axillary temperature was 104° F. and pulse 140; respiration 28; abdomen tender and tympanitic, there was no rose-spots, and spleen was negative. November 4 a crop of rose-spots appeared, but spleen could not be palpated. Her temperature curve was typically typhoidal and reached the normal on the twenty third day of the disease. In this case the temperature during the period corresponding to the second stadium in the adult reached its maximum, 106⅖° F. Recovery.

Case III.—John H., aged 6 years, was under observation from

the time he began to feel unwell, and was taken to the hospital November 12, 1896. In this case there was a progressive zigzag rise for five days, and on admission his temperature was 104° F.; pulse 120; respiration 32. There was diarrhea and epistaxis, tongue was coated but moist, the frontal headache was marked, and the child complained of pain in his back and limbs; abdomen was tympanitic and tender, and rose-spots were visible upon abdomen; spleen was enlarged, extending from sixth rib to costal margin and could be readily palpated; there was a soft systolic murmur at heart-apex. Temperature reached normal fourteenth day of the disease. Recovery.

The infrequency of typhoid fever in early life is strongly maintained by Dr. Northrup, of New York, who, in a recent article on the subject, quotes statistics from the New York Foundling Hospital, the New York Infant Asylum, and Philadelphia Children's Hospital. During the past twenty years at the New York Foundling Hospital, where 1100 of the 1800 children under its care are boarded out in the city and surrounding country, being returned to the hospital when ill, not a single case has been seen by Drs. Northrup, O'Dwyer, and J. Lewis Smith, as confirmed by the 2000 autopsies of Dr. Northrup; and in an analysis of the Stamford, Conn., epidemic of 1895, Dr. Northrup, in a series of 406 cases of all ages, finds but four cases under two years of age.

Morse gives the most extensive series of cases reported by one observer in recent years, analyzing 284 cases from the records of the Boston City Hospital: he finds three cases under 5 years; seventy-seven cases between 5 and 10 years; 204 cases between 10 and 15 years. He explains the insignificant number of young children with that given in Vogel's 1017 cases, and in the 686 combined cases of Henoch, Roeth, Earle, Archambault, Smidt, and Volberg by the fact that small children are rarely taken to the hospital.

Noyes says, "Typhoid fever in early infancy in a typical form is rare in this country, though not uncommon abroad; it is a mild or abortive form that must be looked for here if we wish to separate it from other intestinal or meningeal diseases that may appear."

Rotch states that typhoid fever is exceedingly rare in the first two years of life, uncommon under three years, and becomes more common after the third year as the child grows older.

Pepper says that typhoid fever is far more general in early life than is usually recognized.

In Ashby and Wright is the following: "As a general rule it may be stated that children and young people are more susceptible to enteric fever than are adults, though it is not common in children under 3 years of age."

Tyson, in his "Practice of Medicine," says typhoid may occur at any age, is less common in children; perforation has occurred in a child five days old, while not a few cases have been reported in sucklings.

Keating says that cases of typhoid in the first year of life are exceedingly rare, but from this period through infancy and childhood the liability is fully established.

Barthez and Sanné state that typhoid is as frequent among children as among adults and its characteristics are almost the same.

Osler says typhoid is not very infrequent in childhood, but infants are rarely attacked.

Holt, in his recent work, states he has never seen typhoid fever in a child under 2 years of age, and believes it to be very rare, although undoubted cases have been reported even during the first year, Murchison having recorded one case in a child six months old, and Ogle in one 4½ months old, the diagnosis being confirmed by autopsy in both instances; he further states that no case of typhoid was seen by him in the New York Infant Asylum during his eight years of service there. About 10,000 cases of illness having been treated during that period. In seven years but one case was admitted to the Babies' Hospital; this was in a child 2½ years old.

Dr. Bridges records two cases of typhoid in infants of 15 and 18 months of age, and says he could palpate the spleen, and after the seventh day rose-spots appeared.

A house epidemic affecting eleven children between ages of 3 and 12 years is described by Bond.

England reports a case of typhoid fever in an infant 8 months of age. Spleen was palpable, and rose-spots were present. The diagnosis was difficult during the first week, and he first believed it to be entero-colitis.

Griffiths reports four cases in children 3, 7, 11, and 13 years after scarlet fever.

Three cases occurring in St. John's Guild Hospital are reported in children 4, 9, and 14 years of age.

Bootbyer reports the case of infection of five out of a family of eight persons through an infant of eight months, who had been removed from the breast of its mother shortly after the latter was found to be suffering with enteric fever.

Read reports and analyzes twenty-two cases of enteric fever in children between 4½ months and 10 years.

Forchheimer, in the Cincinnati epidemic of 1888, treated seventy cases in children without a death. More than nine-tenths of the cases which came under his observation were in children.

Henoch reports 376 cases and twenty-six autopsies.

Lesions.—The study of the lesions of typhoid fever in young children has not been extensive because of the few opportunities offered the pathologist. In a general way the lesions are said to resemble those of adults except in severity, there is acute swelling of Peyer's patches, especially in the lower ileum, and of the solitary follicles of the small intestines and the colon, which may be followed by ulceration, there are frequently present evidences of a mild catarrhal enteritis, the mesenteric glands are swollen and the spleen is enlarged and soft.

The fact that ulceration and hemorrhage are much less frequent would explain, according to one writer, the absence of pronounced abdominal symptoms.

Henoch says, "The infrequency of intestinal perforation and profuse bleeding depends upon the fact that ulcerations are less frequent, and also upon the fact that when present they are less numerous, not so deep, and smaller than in the adult."

Symptoms.—In childhood the prodromal stage is not appreciable in the same degree as in the adult type, and oftentimes the onset of the disease is abrupt. One writer (Love) says, "Given a child of any age, with or without intestinal disturbance, with continued elevated temperature, with or without marked evidence of cerebral disturbance, the possibility of the presence of the Eberth bacillus of typhoid fever should be constantly kept in mind."

Forchheimer noticed in the Cincinnati epidemic, "In the majority of instances in children the disease begins suddenly; there is pain in the stomach, usually epigastric, without sensitiveness. Insomnia is apt to be present early, and may alternate with marked drowsiness, the child being wakeful at night and dozing during the day. Epistaxis is absent in a large proportion; 5 per cent. suffered from this symptom, usually it was of slight degree; the tongue is much the same as in adults. Constipation is the rule during the earlier days of the disease and is quite obstinate. The symptoms of typhoid fever in young children depart in a measure from the classical type of the adult. (Keating.) The temperature may be from first to last intermittent; these cases were, according to one author, evidently included by the older writers under the term infantile remittent fever. The typical typhoid temperature-range of Wunderlich is rarely seen in childhood, nor do we often meet with charts showing the regular progressive zigzag rise of the first five days, which is of diagnostic importance in adults. We do not recognize in children the distinct periods into which the course of the disease in adults may be more or less successfully divided in accordance with

the stage of development and the successive prominence of special symptoms, nor are we able, as a rule, to divide satisfactorily the febrile movements into the two distinct and well-defined stadia usually seen in adults."

"The tongue frequently remains moist, and often the dry tongue so characteristic of the adult type of the disease is absent. The pulse is generally regular, and dicrotism of the pulse has never been observed in very young children. During defervescence and convalescence, however, it may present a peculiar characteristic. De Gassicourt and Revilliot saw the pulse become slower and present irregularities which caused it to resemble the pulse in certain stages of meningitis. This peculiarity, which lasted from eight to fifteen days, did not seem to have any unfavorable significance. The irregularity of the pulse in the febrile period is more serious, for it indicates then a cardiac exhaustion which often presages death. The heart is rarely seriously involved in typhoid fever in young children. Myocarditis is exceptional and always slight, and sudden death has been observed but two or three times."

"Livid streaks near the articulations, particularly the knees, are peculiar to infancy, and are due to an increase in growth which sometimes is surprisingly rapid. The frequency of desquamation is also a peculiarity of infancy." (Rocaz.)

"In children the fever in the first period is of subcontinuous type. In the second stadium the fever, instead of being subcontinuous, is distinctly remittent, and in childhood this second stadium is imperfectly developed, short in duration, often absent altogether." Other cases are of the abortive type, and are convalescent by the end of the second week without going through the ordinary three weeks' course. In still other cases the morning remission is much more marked, being perhaps three or four degrees lower than the evening. After 5 or 6 years of age the symptoms differ but slightly from the type of the disease seen in the adult.

One writer (Love) says, "The erratic, undeveloped, and hypersensitive nerve-centres in early child-life explain why the toxic secretions of the Eberth bacillus should make cerebral symptoms very pronounced." As a rule, nervous symptoms are much less marked, according to Keating, in infancy and childhood than in adult life. "The child is usually apathetic and indifferent, even in cases of moderate severity it lies with its eyes half closed, lightly somnolent, sometimes restless. When spoken to, turning away or answering in monosyllables with evidences of irritation. Delirium is usually mild, apt to occur in the evening, and is sometimes associated with night-terrors."

The common form in childhood is the so-called wandering delirium; it is apt to be transient and recurrent rather than continuous. Intestinal hemorrhage is far less common in children than in adults, due to the relatively slighter lesions of the former period of life.

Earle, of Chicago, according to Keating, furnished him notes of an unpublished case of fatal intestinal hemorrhage in a child 22 months old. Post-mortem examination revealed the characteristic lesions of enteric fever.

Henoch cites a case of fatal hemorrhage occurring in a girl 10 years old, which took place in the third week.

In the three cases under my observation nervous symptoms were pronounced in but one case, that of the youngest child. Individually the symptoms in all three cases departed from the classical, and in only one case, that of the eldest child, was the spleen palpable; there was epistaxis in one case; the abdomen was tender and tympanitic in all three cases, and rose-spots were constant in all three cases. Frontal headache was complained of in one case, the temperature-curve was characteristic in two of the cases, and of the abortive type in one case.

The prognosis of typhoid fever in young children is dependent upon the age. It is very grave in children under 3 years. Not so serious at 4 years, and nearly always favorable at 5 years and over. The mortality in children is decidedly lower than in adults, probably, according to one author, not exceeding 1 per cent., though the published statistics relating to mortality are without value except as showing these general facts. Convalescence is much more rapid and relapses occur more frequently, but they are usually less serious than the first attack.

Jacoby says if the spleen remains enlarged after the temperature has fallen a relapse is to be feared.

Day[1] refers to a peculiar dark-red rash, resembling that of typhus fever or of the prodromal stage of small-pox, as an indication of prognostic value in typhoid fever. In four cases this rash, with rapid pulse, high fever, distended abdomen, and clear intellect, presaged intestinal hemorrhage.

The diagnostic points are the continuous fever, the eruption of rose-spots, which are present in about 75 per cent. of cases, enlargement of the spleen, noticeable usually by the end of the first week, though difficult to palpate in a child under 3 years; unless the continuous fever and rose-spots be present the case must be regarded as doubtful.

[1] Dublin Journal of the Medical Sciences, March, 1896.

The differential diagnosis is to be made from malarial fever, ileo-colitis, meningitis, and tuberculosis, and from other ill-defined continuous fevers of unknown origin.

From malaria, by the plasmodium in the blood and the therapeutic test with quinine.

Ileo-colitis is limited to the first three years of life, and in ileo-colitis intestinal symptoms are more severe, and enlargement of the spleen is absent, tympanites and eruption in the abdomen absent. Landois says, "Acute diseases associated with high temperature generally go hand in hand with a decrease of the red and increase of the white blood-corpuscles; this does not hold good, however, in typhoid fever, where no such increase in the number of leucocytes takes place." The absence, therefore, of hyperleucocytosis must be strongly considered as confirmatory evidence of typhoid infection, and is an important differential point in diagnosticating the disease.

The bacteriologist lent no tangible assistance to the clinician in the accurate diagnostication of typhoid fever, until the work of Widal, Achard, Hanshalter, and other observers with the blood serum of a patient with typhoid fever. In the method of Widal unless the recent work of Fränkel, of Halle, who, in the course of some experiments, found the reaction present in the case of two men who were supposed to have had the disease a year before the examination,[1] detracts from the value of the test, we have a most important means of rapidly diagnosticating typhoid fever.

The method is briefly, the addition to a culture of the typhoid bacillus of an equal amount or a fractional amount up to 1 to 10 or 1 to 100 of the blood serum of a patient who had typhoid fever, or had recently recovered from that disease, the typhoid bacilli would cease to move about freely and singly in the fluid; their action would become inhibited according to the proportion of the serum added, then they would become agglutinated into groups, and some finally would break down or lose their former shape. Microscopical examination shows them in clumps in the hanging drop. Through the kindness of Dr. Griffith the blood of the new-born child delivered during the typhoid attack of its mother was tested by this method, and gave the reaction.

The results obtained by this method in the laboratory of the health department of New York City were quite uniform in a test of 350 cases of possible typhoid. In 130 of these, as far as could be learned, the histories had been that of typhoid. In 101 of the 130, the reaction was obtained, in 29 it was not obtained; the examination made in the first week of the disease yielded 70 per cent. of positive

[1] Medical Record, February 27, 1897.

results; in second week 69 per cent.; in third week 75 per cent.; in fourth week 92 per cent. No case having clear clinical typhoid history failed to give the reaction by this method.

The exact clinical value of this method has not as yet been determined, likewise the method of Elsner, which consists "in the preparation of cultures from water, food, or soil, or stools of patients suffering from typhoid fever upon a special culture-medium which is composed of Holz's acid potato-gelatin with 1 per cent. of potassium iodide. Upon this medium only a few forms of bacteria will grow, and among these the bacterium coli and the typhoid bacillus. The investigations of Elsner[1] showed that the bacillus of typhoid fever may be readily distinguished from the bacillus coli by his method, the colonies of typhoid bacilli are slow in growing and scarcely visible for twenty-four hours. On the contrary, the coli colonies grow rapidly. After forty-eight hours the typhoid cultures present themselves as small glistening aggregations having the appearance of drops of water with finely moulded structure. The coli colonies are larger, much more granular, and are brownish in color. By this method the diagnosis is made in forty-eight hours.

For the sake of completeness the diazo-reaction of Erlich may be mentioned. It consists of 5 parts sulphanilic acid, 50 parts hydrochloric, 1000 parts distilled water, in one solution, and a second solution of .05 sodium nitrite and 100 parts distilled water; 250 parts of the first are mixed with six cubic centimetres of the second, and this is placed in a glass tube with an equal quantity of urine, and one-eighth volume of ammonia; upon shaking, a red color appears.

Jez,[2] as a result of upward of 3000 observations, in 250 cases of various disorders, has arrived at the conclusion that the occurrence of the so-called diazo-reaction in the urine, especially in cases of typhoid fever, appears to be attributable to toxic substances generated by the typhoid bacillus (typho-toxins) altered in some way in their passage through the human organism. The reaction may appear in the course of a number of diseases, and bears no relation to the fever; and it is not dependent upon the form of medicinal or dietetic treatment employed. It appears with considerable constancy in cases of typhoid fever(from the second to the seventh day), and is of prognostic significance in this disease, its intensity varying directly with the severity of the morbid process. In cases in which the diagnosis is doubtful, as between typhoid fever on the one hand and gastric fever, acute gastro-enteritis, and malarial fever upon the other hand, the reaction is of differential diagnostic import, inasmuch

[1] Zeitschrift für Hygiene und Infections krankheiten, Bd. XXII.

[2] Wiener medicinische Wochenschrift, December 19, 1896, pp. 2, 270.

as it does not appear in the course of any of the three diseases last named; in doubtful cases in which the reaction fails to appear, typhoid fever is to be diagnosticated only with great caution. On account of its simplicity of application and its great diagnostic and prognostic significance, the test should never be omitted.

In the treatment of typhoid fever in children and infancy, the maxim that the patient rather than the disease is to be treated is as true as in the treatment of the disease in adults, and expectant symptomatic.

Tepid baths may be counted among the agents for the hyperpyrexia; the temperature of the baths should be regulated so as not to be more than six or seven degrees lower than the body temperature, in order not to produce any sudden chilling, and they ought to last from twenty to forty-five minutes according to the exigency of the case.

The application of very cold water, or ice-cold compresses, cold packs, etc., is, of course, neither desirable nor safe. And the extreme method of Brand is inadmissible, since the effect of cold applications is more rapid and greater, and circulation is more tardy afterwards than in adults.

The greatest attention should be given to dietetics, milk may be diluted, or partially peptonized, and kumyss or matzoon may be substituted for it if the stomach is irritable.

Tympanites is rarely severe, it may be relieved by a glycerin suppository, milk of assafetida, or rectal tube, as in the adult.

Alcoholic stimulants form no necessary part of the routine treatment of enteric fever in children. In the early stages of the disease their use, except to meet special indications, is probably in most cases injurious rather than beneficial. In the later stages the indications which call for their administration are twofold,—

(1) Great general prostration, as manifested by weakness of the heart's action.

(2) Prominence of nervous symptoms.

The attempts to apply the methods of serum therapeutics have met with little success thus far.

MEMORANDUM.

CASTRATION FOR PROSTATIC HYPERTROPHY.

I DESIRE to place on record a brief report of the case of Mr. X., a well-to-do farmer, aged 71 years, who consulted me on September 1, 1896. His statement was that he had been a sufferer from bladder trouble for the last ten years, and he now wanted relief from the excruciating pain which he could no longer endure. Examination revealed a very sensitive urethra, a severe cystitis complicated with orchitis involving both testicles, which were considerably swollen.

The prostate was as large as a large lemon. I found it impossible to use even a soft catheter without cocaine. The amount of residual urine was five ounces. Urination was frequent and very painful, necessitating the use of opiates. The urine was very ammoniacal.

I used daily irrigations of warm boric-acid solution, local applications, and internal remedies, the latter with the view of rendering the urine healthy and non-irritating. The testicles required incision, after which they were elevated and sedative applications were applied. Salines were administered to keep the bowels free. The orchitis was relieved, but the cystitis and painful micturition remained. The old gentleman was constantly praying for death to relieve his sufferings. At this time I told the family of the operation first proposed by Professor White, that of castration for enlarged prostate, and exhibited to them the reports of all the cases recorded in the UNIVERSITY MEDICAL MAGAZINE for the last two years. Both the patient and family consented to the operation. Mr. X. was taken to the hospital at once, where he was properly prepared and the operation was performed. I had with me as counsel and assistant Dr. A. J. Sanders, of Grand Island, Neb.

Primary union was obtained, and at the end of a week the patient was sent to his home, as he was developing melancholia and it was thought best to change his surroundings. This developed into a slight mania, which subsided under treatment. The irrigation of the bladder with warm boric-acid solution was continued, also the antiseptics internally.

It is now six months since the operation; the prostate has atro-

phied so that micturition is free and painless; the old gentleman is hale and hearty and able to drive into the city every few days, six miles, to transact business and sell his produce.

There was a history of an attack of insanity some twenty years previously from which he recovered.

I am thoroughly convinced the operation suggested by Professor White has prolonged his life and relieved him of his misery.

HENRY D. BOYDEN, U. of P., '95.

ALUMNI NOTES.

IMPROVEMENT OF THE CAMPUS.

MANY material improvements have been made at the University of Pennsylvania the past year or so, but none have attracted such general appreciative expressions from the student body as the recent alterations made in beautifying the campus and the grounds around the several buildings. The work was undertaken by a number of well-known women of Philadelphia, and has been carried to a very successful completion.

Trees and shrubbery have been set out in large numbers all over the college campus, around Houston Hall, along Spruce Street, and surrounding the domitories. Mounds and terraces have been erected, and the walks and drives have been rearranged in a very pretty and attractive manner. Many of the trees, plants, and clinging vines were obtained from places of historic interest.

The transformation in the appearance of the grounds and buildings has been very great, and certainly adds to the attractiveness of the University as one of the principal places of interest in the city.

A MEMORIAL TABLET TO DANA OSGOOD.

A MEMORIAL tablet in honor of Winchester Dana Osgood, the scholar and athlete of the University who was killed in the Cuban rebellion last year, will be placed in Houston Hall about May 30.

AN ARMY PROMOTION.

LIEUTENANT-COLONEL WILLIAM HENRY FORWOOD, class of '61, deputy surgeon-general, United States army, has just been promoted to the rank of colonel and assistant surgeon-general United States army.

Necrology.

Dr. Traill Green died in Easton, Pa., April 29, 1897. Dr. Green was born in Easton, May 25, 1813. He graduated from the Medical School of the University of Pennsylvania in 1835. In 1837 Dr. Green was made professor of Chemistry at Lafayette College. In 1841 he was called to the chair of Natural Science at Marshall College, Mercersburg, where he remained until 1847, when he returned to Easton. In 1866 Washington and Jefferson College honored him with the degree of LL.D. He was the first president of the American Academy of Medicine, and a member of many other scientific societies. He was a member of the Board of Trustees of Lafayette from 1837 to 1841, and in 1881 was again elected a member of the board, and continued to hold the office until removed by death.

Dr. Green was elected acting president of the College in 1890, when Rev. J. H. Mason Knox resigned, and filled the vacancy until Dr. E. D. Warfield was elected the following year. He taught natural science at Lafayette from 1853 to 1874. He erected and fitted out the astronomical observatory of Lafayette at a cost of $15,000 and placed therein the valuable reflecting telescope presented to him by Williams College. For fully twenty years he was a member of the Easton Board of Education, several terms serving as its president. He was also one of the organizers of the Northampton County Medical Society forty-eight years ago, and was for a number of terms its president. For a number of years he was a member of the Board of Trustees of the State Hospital for the Insane at Harrisburg.

American Public Health Association.

The Twenty-fifth Annual Meeting will be held in Philadelphia, Pa., Tuesday, Wednesday, Thursday, and Friday, October 26, 27, 28, and 29, 1897. The president is Dr. Henry B. Horlbeck, of Charleston, S. C.; secretary, Dr. Irving A. Watson, Concord, N. H.

EDITORIAL.

THE PRESENT STATUS OF ANTISTREPTOCOCCIC SERUM.

During the past year a number of cases of streptococcus and other forms of infection, treated by the use of antistreptococcic serum, either alone or in conjunction with other measures, have been reported. It is disappointing to acknowledge at the outset that so far no conclusion has been reached in regard to the value of the serum in these cases. Statistics have been offered to show that the mortality attending the various forms of streptococcus infection has been materially decreased by this treatment. This is particularly true of puerperal infection. The question naturally arises in this connection, What would have been the result in a given case under a different method of treatment; was the recovery *post hoc* or *propter hoc?* On this point the evidence is divided. In a few carefully observed examples, the fall of temperature, the improvement in the pulse, and in the general condition of the patient that followed each injection leads one almost irresistibly to conclude that the serum exerted a powerful influence for good. On the other hand, equally skilled observers have witnessed a decided exacerbation of the symptoms after the use of the serum, and cases are reported in which death seems to have been caused by its administration.

It seems rational to conclude from these facts that in certain cases the serum treatment is appropriate and curative, while in others it may be followed by dangerous or even fatal results,—that is, the foregoing results are attributed to the use of the serum and not to chance.

In explanation of these varying results, the following may be offered. First, as in the use of diphtheria antitoxin, all authors agree that the antistreptococcic serum must be employed early in order to secure the best results. Second, in a mixed infection the antistreptococcic serum could be expected to bring about an improvement only in so far as the symptoms depended upon the presence of the streptococcus or its products, and in the various other forms, as, for example, those from staphylococci and from the bacillus coli communis, no benefit could be expected. Third, cases of infection other than those

caused by the streptococcus are apt to be made worse by the use of the serum. It is very evident that an individual already profoundly intoxicated by the absorption of one form of poison would not resist the influence of another poison as successfully as when in a condition of health. This may to some extent explain the fatal cases.

Theoretically, therefore, before instituting the serum treatment, a bacteriologic examination should be made to determine the nature of the infection. If a pure culture of streptococci be obtained, the antistreptococcic serum may be given with a reasonable hope of obtaining beneficial results. If the infection is found to be "mixed," the propriety of administering the serum should be seriously considered, while in the presence of all other infections the serum should be withheld.

In practice, however, it has been found that the cultures frequently fail; no growth whatever occurring from cases with the clinical evidences of streptococcus infection well marked. The serum must therefore be used somewhat empirically at present, and, although it is proper to make cultures in every case, we are unable at present to rely entirely on the result.

No greater mistake could be made than to suppose that the use of the serum removes the necessity for other treatment. All other measures should be employed in addition thereto. Abscesses must be opened if they exist, and the most thorough disinfection and drainage secured for any focus of infection. The usual supporting treatment—strychnine, quinine, alcohol, and proper nourishment—must be carefully followed.

The present attitude of the profession is to use the serum in cases that seem appropriate in conjunction with the other medical and surgical methods that have heretofore been employed. It is needless to state that only the most reliable preparation should be employed, and the dose should be proportionate to the severity of the intoxication, it being borne in mind, however, that the agent is a very powerful one.

Watson Cheyne suggests, in a recent communication, that the serum be used as a prophylactic in cases in which it is impossible to secure and maintain an aseptic condition of the wound, as in operations involving the mouth, and the rectum particularly. He reports three cases of malignant disease involving the tongue or jaw in which the serum was given on the two days preceding the operation. Two made excellent and afebrile recoveries. The third patient died from cerebral embolism subsequent to thrombosis of the lingual artery.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

The Composition of Expired Air and its Effects upon Animal Life.

Billings, Mitchell, and Bergy (*Smithsonian Report*, 1895) have made a number of experiments upon animals and a thorough research of the literature of the subject, and arrive at the following conclusions, of which this is but a brief abstract:

(1) Air expired by certain healthy animals and men contains no peculiar organic matter which is poisonous to the animals (excluding men).

(2) In ordinary respiration, no bacteria, epithelial scales, or particles of dead tissue are contained in the expired air.

(3) The minute amount of ammonia in expired air appears to be due to decomposition going on in the mouth and pharynx.

(4) The most important contaminations of the air of inhabited rooms are the particles of dust.

(5) The effects of reduction of oxygen and increase of carbonic acid appear the same in artificially-made mixtures as where the change in the gases has been caused by respiration.

The results of this investigation, taken in connection with the results of other recent researches, indicate that some of the theories of ventilation are erroneous, and that the problem of securing comfort and health in inhabited rooms requires the consideration of the best methods of preventing or disposing of dusts of various kinds, of properly regulating temperature and moisture, and of preventing the entrance of poisonous gases like carbonic oxide, derived from heating and lighting rather than upon simply diluting the air to a certain standard of proportion of carbonic acid present.

School-Made Insanity.

Harris Liston (*Lancet*, January 9, 1897) reports a case of insanity in a boy of 16 years, which had as its cause repeated blows upon the head with the open hand, which were administered as punishment. He notes other contributory conditions which prevail in schools and which make insanity not infrequent. The age of puberty, the reprehensible practice of working scholars in the early morning before breakfast and after a long fast, and the emotional influence of constantly recurring religious services carried out in some schools to a ridiculous extent.

Test for Lead in Urine.

Abram (*Lancet*, January 16, 1897), in the course of an article on "Three Cases of Lead-Poisoning," makes mention of a simple method for the detection of lead in the urine, which is so easily performed that it seems worthy of mention here. The method is apparently original with von Jaksch, and is mentioned on page 211 of the 1896 edition of his "Klinische Diagnostik."

The latter author directs that a strip of magnesium be laid in the liquid suspected of containing lead. In a short time a deposit of metallic lead will be found on the magnesium if the liquid contain lead.

Abram modifies this method by the addition to the suspected liquid of a solution of oxalate of ammonium, 1 gramme to 150 cubic centimetres of water.

A deposit is seen in half an hour, but the test is continued for twenty-four hours. It will detect lead when present in the proportion of 1 to 50,000.

Creosote in the Treatment of Pleuro-Peritoneal Tuberculosis in Children.

Thoma (*Lancet*, January 16, 1897) suggests the use of enemata of cod-liver oil containing creosote for peritoneal tuberculosis in children. He gives four fluid-ounces of oil containing eight grains of creosote, increasing the latter to sixteen grains by the end of two weeks. It relieves the digestive symptoms and is unquestionably absorbed. He cites two cases of this disease, both of which improved markedly under the treatment.

Heredity in Graves's Disease.

Curtin (*International Clinics*, Vol. IV, Sixth Series) concludes a paper read in Mexico, as follows:

(1) Graves's disease is hereditary.

(2) The marriage of those having the tendency should be discouraged.

(3) A person known to have the inheritance should not reside at an elevation of more than 500 feet.

(4) They should avoid great excitement or any highly exciting occupation.

(5) They should not reside in a limestone district.

(6) They should not reside in a malarious district.

SURGERY

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

The Pathogenesis of Aponeurotic Lacerations and Muscular Hernia.

Janni (*Reforma Medical*, November, 1896) reports a case of a muscular officer who, while marching three months previously, was suddenly seized with severe

pain in the middle third of the antero-external region of the left leg. A few days' rest seemed to cure it, but on trying to walk the pain returned. Each time exercise was attempted pain recurred for a period of three months. Nothing could be felt externally during this time. On being further examined a small zone of lessened muscular resistance could be felt over the painful area. An incision was made and the aponeurosis was found ruptured for about two centimetres.

The author then made experiments upon dogs, and found that after small lacerations of the aponeurosis without injury to the muscle no hernia took place either during contraction or relaxation.

He also found that, except at the very beginning of a muscular contraction, the muscle exercises no eccentric pressure on its aponeurotic sheath as estimated by a manometric column of fluid.

The author's experiments seem to show that a muscle, except under special conditions, cannot rupture its sheath, but clinically this appears to be only a possible explanation in certain cases. When opposing muscles are not acting or there is some marked change in the relations between the muscle and its sheath, rupture of the sheath may occur from simple contraction.

The Etiology of Abdominal Abscesses.

Kreilich (*Wiener klinische Wochenschrift*, September, 1896) records five cases illustrating this difficult question. The first patient was 52 years of age, and was the subject of a perinephritic abscess, the symptoms of which came on very slowly. The abscess was opened and recovery was rapid. The pus contained staphylococci in small amount, and cultures showed the presence of the aureus. The second case was one of perinephritic abscess with a somewhat acute onset, although of longer duration than the first. The patient, a man of 36 years, soon recovered after the evacuation of the abscess. No bacteria were found in the pus except a few rods and coccus-like forms and some leucocytes. All attempts at cultivation were unsuccessful, as were also experimental inoculations with guinea-pigs and mice. No tubercle bacilli were present, although the man had some infiltration of both apices. The third case was that of a woman, aged 43 years, who had a preperitoneal abscess of six weeks' standing. Operation effected a complete cure, the pus contained the streptococcus.

The first two cases resemble each other as to location and slow course; but while in the second the presence of pyelitis pointed to infection from the urinary tract, there was no evidence to indicate whether the first originated through the blood, intestinal canal, or urinary organs. The absence of living organisms in the second may possibly have been due to changes resulting from the long duration of the disease; in this respect it would resemble those abscesses of the uterine adnexa in which the pus is sterile. The preperitoneal abscess in the third case may have originated by infection either from the gut or gall-bladder. The fourth case was that of a man, aged 33 years, who was suddenly taken ill with colicky pains, vomiting, rigors, and fever. Six weeks later a tumor was observed in the umbilical region, and a laparotomy revealed an abscess which originated from a perforated duodenal ulcer. Cultures showed the presence of the Friedländer's pneumonia bacillus.

The last patient was a woman, aged 52 years; she had a tumor extending from the right hypochondriac region to the umbilicus; this was found to be an abscess, which was opened and followed by recovery. The pus showed an organism that was either a bacillus or a vibrio, but no differential diagnosis could be made.

Cerebral Abscess due to Ear-Disease.

Grunert (*Berliner klinische Wochenschrift*, December, 1896) observes that the prognosis after operation is not as good as might be expected.

(1) Because these abscesses are not infrequently multiple (20 per cent.).

(2) Because of the difficulty in making a correct diagnosis. A number of these abscesses run a latent course. Occasionally the symptoms are few and of a passing character. Again the patient is sometimes seen in the last stages of the disease, when the abscess has burst through to the surface of the brain or into the ventricles. Even when the patient has been under observation in hospitals diagnostic mistakes are possible. When the abscess is accompanied by other intracranial complications a correct diagnosis may be out of the question.

A patient, aged 32 years, had a discharge from the ear lasting several weeks, the mastoid region was red and tender. As no improvement occurred, the mastoid was opened and a breaking-down cholesteatoma was cleared away. Symptoms of intracranial disease persisted, the pain radiating from the ear being marked. There was no fever; considerable mental change was noted, consisting of impairment of memory, excitement varying with depression, loss of appetite, etc. The greater frequency of temporo-sphenoidal than cerebellar abscess, the headache limited to the right temporal and frontal region, and the ultimate appearance of a distinct hemiparesis and anesthesia on the opposite side indicated the position of the abscess. A large cavity in the temporal lobe was laid open and drained, and the patient made a good recovery. The pus contained the streptococcus in pure culture.

These cases should be observed for a long time. If the whole of the disease is not cleared away, a reappearance of intracranial symptoms is possible.

Value of the Cystoscope in lowering the Mortality of Nephrectomy.

E. Hurry Fenwick (*British Medical Journal*, February 27, 1897) gives his views of the use of the cystoscope in kidney affections. He has used the cystoscope in twenty-one cases of nephrectomy with two deaths. No patient with tuberculous deposits in the epididymis or prostate or obvious malignant disease of the bladder should be examined. In other cases examination should be done with a perfect instrument, in a clear medium, by a skilled hand, backed by an educated eye. The surgeon should be prepared to operate when the cystoscope is withdrawn. Carelessly used it has a death-rate of its own. It would be better to do an exploratory operation on both kidneys rather than damage both these organs by those ascending septic changes which are induced by bungling manipulations in the bladder. All cases of profuse hematuria - either symptomless or accompanied by slight renal pain—should be judiciously examined with the cystoscope without delay, an operation on the kidney or bladder being permitted and carried out coincidently with cystoscopy. All cases of severe symptomless pyelitis without implication of the lower urinary or genital tracts should be judiciously cystoscoped to demonstrate the presence and working capacity of the kidneys and to locate the diseased kidney. In women, catheterization of the ureters is probably a more certain form of exploration. Illustrative cases are added.

The Effects of Small-Calibre Bullets as used in Military Arms.

G. G. Davis (*Annals of Surgery*, January, 1897), as the results of his investigation of the effects produced by the small-calibred bullet now so generally employed for war purposes, submits the following conclusions:

(1) That the initial force of a bullet is an onward or penetrative one.

(2) When penetration is impeded, the onward force becomes transformed into a lateral one.

(3) That explosive effect is only another name for lateral action,—*i.e.*, outside of the track of the bullet.

(4) That lateral action is most marked in hard bones (the fragments being carried onward) and in organs containing water (bladder, brain, liver, etc.).

(5) That practically the rotation of the bullet on its axis does not materially affect the character of the injury.

(6) That the effects of gunshot wounds is not so severe on the living body as on the dead.

(7) That the destructive power of the small-calibre arm has been over-estimated.

(8) That its stopping or disabling power is less than that of larger calibres.

(9) That wounds in future conflicts will be, as a rule, less severe and healing more rapid, with fewer complications than has been the case in the past.

(10) That less radical treatment will be required and conservatism will be followed by most brilliant results

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Intestinal Anastomosis by Means of a New Pattern of Decalcified Bone-Ring.

Charles B. Ball (*British Medical Journal*, April 24, 1897) describes a modified form of Mayo Robson's decalcified bone bobbins for intestinal anastomosis. The following are the indications to be met:

(1) Sufficient surface of each end of divided intestine should be opposed in order to obtain a firm bond of adhesion.

(2) No leakage should be possible along the line of union.

(3) No great pressure should be made by the appliance used on the gut outside the junction, which might endanger the vitality of the intestinal wall.

(4) No undue narrowing of the lumen of the bowel should result from the operation.

(5) The method selected should be capable of rapid application; this obviously becomes a question extreme of importance in cases of multiple resection.

(6) In cases where the intestine above the obstruction is much dilated while that below it is contracted, the procedure should allow of as even and uniform adjustment as is possible with tubes of unequal calibre. The main difference between this ring and Mayo Robson's bone bobbin is that it is not so thick in proportion to its length and the groove is undercut to allow of greater involution of the edges of the intestine. The upper and lower portions of the rings are sometimes made of different sizes instead of both being of the same diameter. In using it a continuous circular or glover's stitch is passed through all the coats of the two ends one-eighth of an inch from the edges. The button is then slipped in and the suture tightened and tied, thus uniting the two ends. A continuous Lembert suture is placed outside, the needle being passed parallel to the line of union. The author claims that this ring can be applied as quickly as can a Murphy's button. Four illustrative cases are appended. The rings are made by Krohne and Lesemann, of London, and Fannin & Co., Dublin.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Subcutaneous Injections of Artificial Serum in Uremia.

Richardière (*Union Médicale*, December 5, 1896) has used large injections of artificial serum in two cases of uremia with good results. After bleeding to the extent of 300 to 400 grammes, he injects slowly into the subcutaneous tissue 800 grammes of serum at the temperature of the body. The serum was made after Hayem's formula, and consists of sodium chloride, 5 grammes; sodium sulphate, 10 grammes; distilled water, 1 litre; or about forty grains of common salt and eighty grains of sodium sulphate to the pint.

The first case was one of Bright's disease with intense dyspnea, abundant moist râles on the chest, and extensive dropsy. Under the usual treatment the symptoms grew worse, the respirations assumed the Cheyne-Stokes type, and in six days the patient became comatose. After the withdrawal of 300 grammes of blood the pulse fell from 140 to 120, and the respiration became slower and more regular. In a few days, however, the patient relapsed and the condition became alarming. The patient was again bled 250 grammes, after which 800 grammes of serum were injected, and this was followed in six hours by a second injection. The temperature rose rapidly, the respiration became regular, the stupor disappeared, the urine increased to one litre in the twenty-four hours, and, although the dropsy persisted, the patient had no further uremic symptoms. In another grave case the improvement following the injection disappeared in twenty hours. A second injection was, therefore, given, and this was followed by profuse diarrhea, and thereupon a speedy recovery was effected. After quoting other cases, the author points out that the injections are harmless though painful; that they raise the temperature, slow the pulse, make the breathing less frequent and more regular, and increase the amount of urine. The diarrhea sometimes produced is also regarded as a favorable result.

A Mechanical Treatment of Pneumothorax.

D'Allesandro (*Gazz. degli Osped. e delle Clin.*, February 7, 1897), as the result of experiments on dogs and guinea-pigs with pneumothorax artificially produced, thinks that the best treatment of this condition is by means of a tube or cannula with a valve opening only from within outward. By this means he found that air issued only during expiration, and that none entered the pleural cavity during inspiration, hence the air was gradually removed. The author believes that this method of treating pneumothorax is not only safer than thoracocentesis, but more efficacious.

Diphtheria Antitoxin in Germany.

The first annual report of the Imperial German Board of Health (*Arbeiten aus dem kaiserlichen Gesundheitsamte*, Vol. xiii, 1897) embodies the returns relative to the use of antitoxin in the hospitals of the German empire. The results of the use of the *heilserum* are based on 9581 cases. Out of these cases the recoveries were 83.5 per cent., and the deaths were 15.5 per cent., while 1 per cent.

was still under treatment. The report concludes with the following statement: "The medical treatment of diphtheria with antitoxin marks a decided advance in the domain of therapeutics. Favorable results are more often noted from its use than are known to occur under previous methods approved by science. The secondary effects occasionally observed are of slight importance when compared with the general advantages of its use."

Lycetol.

Tollenaere (*British Medical Journal*, April 10, 1897) remarks that lycetol, or tartrate of dimethylpiperazin, unites to the solvent action of the piperazin the not less efficacious action of the tartaric component, which in the economy is transformed into a carbonate, alkalinizing the blood while possessing a diuretic action. By its continued use, combined with a suitable dietary, the painful exacerbations of the chronically gouty may largely be prevented; sometimes even the biurate deposits may be caused to disappear from the articulations. The author had recourse to the drug in two cases of chronic gout, which had been under treatment for many years, in both of which almost all the antigout remedies had been exhibited with but poor results. In each the lycetol was given during an exacerbation. In the first case, that of a man aged 55 years, the result was very satisfactory; after ten days the pains had completely yielded, and the patient, who still takes half a grain of lycetol daily, has been for six months free from all uneasiness. In the second case, a man aged 35 years, the result was excellent for the first two to three days. But the effect was not maintained, and at the end of eight days the patient asked for a change in treatment. In this case, too, the author believes the partial success of the lycetol to have been greater than that of any other drug previously prescribed. Lycetol was also given in seven cases of chronic articular rheumatism. Of these, in four cases there was a satisfactory result, lasting, however, only a few days, so that after a fortnight the patients experienced no change in their condition; in the remaining three there ensued an obvious improvement of the local and general condition, the patients suffered less, felt less pain in the affected joints; in one case there was an evident betterment of the lesions. In one case of arthritis deformans the drug was tried, but with no result. Out of four cases of sciatica the result was favorable in two, negative in two. In one case of seven weeks' standing, of rheumatic origin, in a man of 40 years, the patient improved so rapidly that after three days he failed to present himself. Lycetol was also tried with doubtful result in two cases of acute articular rheumatism during that period often observed after a long duration of this disease, in which frequent relapses are experienced, and in which the organism seems to become insensible to the action of the salicylates. The author concludes that the drug, without being a specific against gout and the chronic forms of rheumatism, is yet a precious remedy in the treatment of these affections. The lycetol was usually given in divided doses, amounting to one and a half to two grains a day, a glass of water being taken with each powder.

Yeast Nucleinic Acid in Tuberculosis.

Victor Vaughan (*Medical News*, March 20 and 27, 1897) reports the results with nucleinic acid in seventy-six cases of tuberculosis treated by him from May, 1893, to December, 1895. In all tubercle bacilli were found, and many were in the last stages of the disease. Of the seventy-six cases, seventy were those of pulmonary tuberculosis. Of these, thirty died. Of these last, nine were temporarily benefited.

Of the seventy pulmonary cases the author says, "Seventeen have been continuously free from the bacillus for from one month to two and a half years, so far as can be determined from the sputum,—*i.e.*, either there has been during this time no sputum to examine or that examined has failed to reveal the bacillus. To the best of my knowledge, another (No. 47) has been free from the bacillus for more than a year, and another (No. 29) has been free from the bacillus with the exception of a short time, and still another (No. 24) was free when last examined. Twenty were still infected at the last examination. Of these, sixteen have been apparently improved by the treatment. It should be stated that none of these were hospital cases. I was not able to control their diet. Most of them were not rich, and had only inexpensive food. The hygienic conditions under which many of them have lived have not been satisfactory."

Of the five cases of urinary tuberculosis, four were apparently cured. One was temporarily benefited, but developed acute miliary tuberculosis and died. The one case of joint tuberculosis was benefited.

Concerning the value of 1-per-cent. solutions of yeast nucleinic acid administered daily in doses from sixty to eighty minims hypodermically, the author concludes:

(1) In advanced stages of the disease, in which the area of involvement is great, with or without cavities, the best that can be expected from this treatment is temporary improvement. Even this does not occur in all cases.

(2) In initial cases, when the area of infection is limited, this treatment may, and often does, not only arrest the progress of the disease, but it acts as a curative agent.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

Intrauterine Injections of Steam in Puerperal Endometritis.

Kahn (*Centralblatt für Gynäkologie*, No. 49, 1896) has had excellent results in seven out of eight cases of septic endometritis after labor and abortion by the injection of superheated steam into the uterine cavity. The apparatus consists of a metal can with a spirit lamp and a thermometer which registers up to 200° C., some rubber tubing, and a catheter. The application lasts about half a minute, and never over a full minute. By means of a tap the current of steam can be interrupted while the catheter is being adjusted before use, lest scalding or burning should occur. The temperature of the steam must be a little above boiling point, —about 110° C. Kahn finds that the jet of steam is followed by no bad effects and gives little or no pain. It actually puts a stop to the tenderness of the uterus usual in puerperal endometritis from retained placenta, etc. Uterine contractions are actively stimulated and ill-smelling discharges cease. Kahn has no doubt that the steam kills the bacteria in the endometrium, and as it coagulates albumin all blood-vessels and lymphatics are sealed up, and fresh granulations can develop under the protective covering.

Non-Ligation of the Umbilical Cord.

M. B. Kellar (*Pacific Medical Journal*, January, 1897) reports a series of 2000 cases of labor in which he has cut the cord about two and a half inches from the umbilicus, stripped it to remove the jelly of Wharton, and left it to desiccate without ligature or dressing. He claims to have had good results in all cases unless the patients were tubercular or syphilitic. Ligation of the umbilical cord in the human infant he claims is unnecessary, because the operation is not required at the birth of any other animal; because a necessity for it does not exist as appears from the formation of the cord and the structure of the component vessels and from the numerous cases in which no ligature was applied and yet no fatal bleeding followed; because to ligate for cleanliness is superfluous; because it is unreasonable to attach to the process of reproduction in women so glaring an imperfection as that the birth of a single child cannot be safely completed without a strand of thread upon the umbilical cord. In many cases he states ligation may be injurious because it may justly be considered as the cause of secondary hemorrhage from the umbilical cord; because by interfering with desiccation of the cord, and thus preventing its separation, it gives rise to ulceration of the navel and not infrequently erysipelas, fungoid excrescence, etc.; because by maintaining the funicular vessels in a state of congestion and distention from unnaturally retained blood, it causes inflammation of these vessels and hinders their normal obliteration, laying the foundation for umbilical phlebitis, erysipelas, jaundice, pyemia, etc.; because, by preventing a normal escape of blood when the cord is divided, and thus causing hepatic hyperemia and congestion of the portal circulation, it may lay the foundation of that innumerable list of fatal infantile affections which so often appear to originate in congestion of the portal vessels. In some, and probably not a few, the operation of ligating the funis has been directly fatal because numerous cases of death in which the fatal results were ascribed to ligation have been recorded by the highest obstetrical authorities, because it can be seen how the operation in the case of still-born children maintains the right ventricle in the state of distention, and thus effectually prevents the renewal of the heart's action when it has stopped, or renders the stoppage complete when it is about to cease; because in many instances the removal of the ligature has saved the life of the infant when other remedies had failed.

Deflection and Rotation of the Pregnant and Puerperal Uterus.

Dr. Milne Murray (*Edinburgh Medical Journal*, February, 1897) discusses the various views advanced to explain the deflection and rotation of the uterus in pregnancy and during the puerperium. He believes that we must look to the muscular walls of the uterus for the explanation of the tendency to rotation. The rotation and deflection persist for a few days after the expulsion of the child. He refers to the curious fact that in occipito-posterior cases the deflection of the uterus is nearly always to the left, instead of to the right, and it is an interesting fact that there is a fairly close numerical relationship between the proportion of cases of occipito-posterior position and cases of left lateral deviation. Of twenty-six cases of occipito-posterior position observed by Murray eighteen showed definite left-sided deviation after labor. In the other cases the uterus lay in the middle line, and in none of them was the ordinary right-sided deviation noticed. Schröder and Stratz have observed the same thing, but no satisfactory explanation has been suggested. It is a matter of some doubt whether the position causes the deviation or the deviation the position.

Abortion.

A. F. Currier (*St. Petersburger medicinische Wochenschrift*, No. 4, 1897) states that the indications in the treatment of threatened abortion include absolute rest, the use of sedatives, and at times a vaginal tampon to sustain the uterus, although this may excite the uterus to contraction. When the abortion is inevitable, dilatation of the cervix and emptying of the uterus by the finger, placental forceps or curette, according to circumstances, should be carried out if the fetus has recently died. If long dead and the ovum be entire the cervix should be gradually dilated. If the uterus now fails to expel it, forcible dilatation and removal of the ovum are necessary. This must be done if the membranes have long been ruptured and retrogressive changes have occurred.

Artificial Dilatation of the Parturient Canal in Labor.

J. C. Hoag (*American Gynecological and Obstetrical Journal*, February, 1897) calls attention to the fact that it is sometimes useful to dilate the vagina as a means of expediting labor in tardy and painful cases where there is slow physiological dilatation. By this means he claims that not only is the efficiency of the uterine contractions increased, but that the vagina and perineum are dilated and softened, and so the second stage is rendered much less painful and protracted, and the safety of the perineum is greatly enhanced. For this purpose he uses the rubber bags of Barnes, apparently of a large size, as he speaks of distending them with twelve to sixteen ounces of water. The presence of the bag in the vagina causes little or no discomfort to the patient. Hoag prefers this plan to a cutting operation, though he thinks that occasionally episiotomy renders a good service.

Guaiacol in Puerperal Eclampsia.

J. F. R. Appleby (*Boston Medical and Surgical Journal*, March 18, 1897) has used guaiacol in two cases of puerperal eclampsia with "surprising and happy" results. Forty or fifty drops were poured upon the abdomen and gently rubbed in. In a few minutes the pulse became soft, free diaphoresis set in, and the convulsions died away. In both instances there was albuminuria and edema, and both made a good recovery. Guaiacol possesses the advantage of ease of application, certainty of action, and speedy relief of urgent symptoms. Its physiological effect is to cause rapid and marked lessening of arterial blood-pressure, lowering of temperature, and free diaphoresis.

Sudden Deaths of Puerperal and Pregnant Women.

Zweifel (*Centralblatt für Gynäkologie*, No. 1, 1897) reported a case of a multipara, aged 29 years, in which craniotomy was indicated by chills and fever. The patient became jaundiced on the third day, and uterine hemorrhage appeared on the ninth and tenth days without apparent cause. On the eleventh day death occurred without premonition. The cause of death was at first considered to be pulmonary embolism. The heart and lungs were excluded by autopsy. As the kidneys showed the lesions of subacute nephritis, Zweifel concluded that uremia acutissima was the cause of the death. A similar case is not found in literature, and should the diagnosis be correct it will constitute a new cause for sudden death in the puerperium.

The Intrauterine Use of Elastic Bags in the Induction of Labor.

Stieda (*Monatsschrift für Geburtshülfe und Gynäkologie*, 1897, Band v, Heft 3) employs two methods in the induction of labor or abortion by elastic bags. One in which the bag is placed within the cervix, and another in which it is carried above the internal os into the lower uterine segment. With this treatment Stieda combines frequent hot douching to soften the parts and promote dilatation. Five cases are described in detail in which labor was induced in this manner. A living child was born in all the cases, the length of the induced labor varying from nine to twenty-four hours, fifteen hours being the average time. In several cases the induced labor was much shorter than the previous ones. In some cases it was necessary to use spicula in introducing the bag, but in the most this was not found essential. Where it was desired to hurry labor traction was made upon the supply-tube through which the bag was filled, and the distended bag was slowly drawn through the cervix. Where haste was not desired the bag was allowed to remain until expelled. All air was forced from the bag before its introduction, and it was filled with sterile water. Stieda records three cases in which he induced abortion by the same methods. In these he was also successful. The abortion was concluded in about seven hours, the bag being used for between one and two hours. In those cases in which traction was made upon the bag the pelvis of the patient was raised so that the traction was exercised downward and backward in the pelvic axis.

Congenital Teeth.

Dr. Fosbery (*British Medical Journal*, May 1, 1897) reports a case in which a left lower central incisor was observed projecting above the gum on the morning following the birth of the child. The mother noticed that the child bit when first put to the breast; the next morning the tooth was apparent.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

Regarding the Microscopic Relations of the Myometrium in Pathological Enlargements of the Uterus, with Particular Reference to the Muscle-Cells.

Bertelsmann (*Archiv für Gynäkologie*, Band L), from a careful microscopic study of twenty-two enlarged uteri (three cases of metro-endometritis, four of carcinoma of the cervix, three simple enlargements, three multiple interstitial, and five submucous fibroid tumors), comes to the following conclusions: Hypertrophy of the muscle-cells of the uterine wall is frequently associated with interstitial fibroids. Hypertrophy of the muscle-cells always occurs with submucous fibroids and in

every instance where the uterine cavity contains an abnormal substance (pyometra and hematometra). Hyperplastic changes, also increase of the connective tissue and muscle-cells, were found, particularly in metritis and in carcinoma and interstitial fibroids. These results correspond with those of Ritschl and Herczel, who experimented on the wall of the stomach and intestines by causing artificial stenosis and artificial irritation.

Regarding Endometritis Fungosa in the Virgin.

Latour (*Revue internationale de Médecine et Chirurgie pratique*, No. 18, 1896). According to this writer, endometritis fungosa may sometimes be found in virgins. The clinical symptoms do not differ from those seen during the sexual life of women,—fungoid growth of the endometrium and profuse menstrual hemorrhage. The first characteristic symptoms appear with the first menstruation. Infection with micro-organisms, masturbation, and traumatisms are, he believes, etiological factors. The treatment should be ergot, hydrastis canadensis, and hot-water douching. Ordinarily no operation is required, but one should not wait too long before resorting to dilatation, curettement, and the application of chloride of zinc.

A Case of Separation of the Celiotomy Wound a Week after Operation.

Switalski (*Monatsschrift für Geburtshülfe und Gynäkologie*, Band v, Heft 4, 1897), at the meeting of the Krakau Gynecological Society on March 16, 1897, reported the following interesting case: The patient was 33 years of age, operated upon for pelvic inflammatory disease on January 20, 1897. The patient had had a cough before operation, which became much more severe and very persistent after operation. Narcotics were freely given, but without benefit. The convalescence, nevertheless, during the first week was perfectly normal. On January 28 the dressing was found saturated with a bloody fluid, and on removing the dressing intestines were seen covering the abdomen and the incision separated throughout its entire length. An anesthetic was administered at once, the intestines washed with warm Walthard-Tavel solution (normal salt solution), replaced in the abdominal wound, and the abdomen again closed with five interrupted silk sutures. The convalescence now proceeded without interruption, and the patient left the hospital well. Switalski calls attention to the perfectly normal convalescence following the accident, there being no subjective symptoms, the pulse and temperature ever remaining about normal. He believes the cause of separation in this instance was undoubtedly mechanical,—the severe and persistent coughing. The suture material employed in the primary operation was catgut, three separate layers being introduced. He had employed this method and material in twenty-two other cases without accident, and feels confident the method and suture material are not at fault. This accident is not very rare, for Rosner has been able to collect thirty-one cases which have been reported in the literature during the last three years.

Abdominal Enucleation of Fibroid Tumors of the Uterine Body; A. Martin's Myomotomy.

Engström (*Monatsschrift für Geburtshülfe und Gynäkologie*, Band v, Heft 4), in a very complete paper, considers the *pros* and *cons* of the operative methods and other treatment which has been employed up to the present time for fibroid

tumors of the uterine body, and strongly recommends Martin's myomotomy. He has performed this operation in 100 cases, where the tumor varied from the size of a hazel-nut to that of an adult head, with but five deaths. He believes, with all modern observers, that although these growths may in a few instances remain stationary in the uterine wall without causing symptoms, symptoms are apt to develop at any time during life, and usually they do cause symptoms, and should be removed. They may cause severe hemorrhage and resulting anemia, no matter what the size of the growth may be; pain from pressure of the nerves in the uterine tissue (Winckel), from uterine contraction, or from pressure on pelvic nerves; edema from pressure on pelvic veins; kidney-disease from pressure on the ureters; not rarely fatty degeneration or brown atrophy of the heart-muscle, necrosis and suppuration, sarcoma, and other degenerations or accidents which may indirectly result in death. The patient is frequently sterile because of the growth, and if impregnation occurs abortion follows. The tumor, it is true, may disappear with the degeneration of the puerperium, be spontaneously expelled, or atrophy at the menopause. The menopause is usually postponed to 50, 55, or 56 years of age (Schorler), and even then they may cause symptoms, particularly where calcareous infiltration occurs, by pressure on blood-vessels and nerves: they may continue to grow, suppurate, or necrose, as the writer has himself observed. Experience has definitely shown that medicinal and electrical treatment is of no value; that the only method of treatment is operative, either removal of the uterus and tumor per abdomen or vagina, bilateral oöphorectomy, or myomotomy. The best mortality in all operations which remove the tumor is about the same,—5 per cent. Engström, however, believes the ideal operation is the one which removes the isolated fibroid or fibroids and allows the uterus, ovaries, and tubes to remain. The 100 cases which he briefly describes, the tumors, as said, varied in size from a hazel-nut to an adult head. Sixty-three times there was but one tumor, and thirty-seven times multiple tumors; from two to five, and once twenty-two were enucleated. Tumors which extruded into the uterine cavity, intramural, subperitoneal, intraligamentous, and one which distorted and thinned out the cervix uteri were removed; also those with marked development of the blood- and lymph-vessels, more or less necrotic or calcareous change; those with intestinal and omental adhesions and sometimes extensive pathological changes in the ovaries and tubes.

The greater number of cases gave the indications for hysterectomy if enucleation had not been possible. One patient died after fifty-seven hours with intestinal paralysis, frequent pulse without fever, no peritonitis or other signs of sepsis. One died ten days after operation from iodoform poisoning. One died with uremia resulting from carbolic-acid poisoning before operation. Another seven days after operation with intestinal paralysis, frequent pulse, and respiratory failure; no signs of sepsis. Another began to have diarrhea the day following operation, and died on the seventh day. Ulceration was found in the colon and ileum and a fatty heart and liver. In three cases small tumors have since developed. In 113 cases reported by Martin tumors have since been found in three. This he believes is not a contra-indication to the operation for good reasons given. Four patients have become pregnant since operation. One aborted at six months during an attack of typhoid fever; another in the fourth month; one went to term and was delivered of a living and healthy child; and one is now in the third month of pregnancy. Twenty-two of the patients were married and under 40 years of age. Of Martin's 113 cases two became pregnant. One aborted and the other was delivered of a living child. Twenty-seven per cent. of Martin's cases were married and under 40 years of age.

PATHOLOGY.

UNDER THE CHARGE OF
JOHN GUITÉRAS, M.D.,
ASSISTED BY
DAVID RIESMAN, M.D.

Concerning New Preparations of Tuberculin.

Robert Koch (*La Semaine Médicale*, April 7, 1897), in the introductory part of this important article, dwells on the subject of immunity, and contrasts the two distinct forms,—*i.e.*, the one against the bacterial toxins (*e.g.*, tetanus) and that against the micro-organisms (typhoid fever, cholera). The ideal type of immunity is that against both these noxious agencies. In the case of tuberculosis, on account of its prolonged course, one is disinclined to believe in the existence of an immunity, and persons who have recovered from an attack of the disease are not immune; indeed, they seem more liable to a new invasion. But there are facts which seem to indicate that tuberculosis can carry with it a certain degree of immunity. This is observed in miliary tuberculosis in man and in the experimental tuberculosis of the guinea-pig. There is a period in those affections when the bacilli, which previously propagated actively, become very scarce. Unfortunately this condition supervenes too late to be of use.

In miliary tuberculosis of man and in experimental tuberculosis of the guinea-pig there is a rapid general invasion of the organism with bacilli, and it appears that we must look to this phenomenon for the explanation of the period of immunity accompanying the disease. In the ordinary form of human tuberculosis the bacilli present are too few and their absorption too restricted for the production of immunity, which seems to be contingent on the dissemination of the bacilli through the entire system, as in miliary tuberculosis.

Efforts to obtain an artificial immunity with living or dead bacilli failed; abscesses were invariably the result; if bacilli were injected into the circulation of rabbits, they set up nodules in the lung, in which they were found unabsorbed and unaltered.

Unmodified bacilli proving thus inefficacious, Koch endeavored to render them absorbable by chemical means. Treatment with dilute mineral acids or alkalies facilitated absorption; but, evidently through destruction of the active agent, immunity was not produced. The next attempt was to secure immunity with extracts prepared from the bacilli themselves, and resulted in the discovery of tuberculin, which has the property of evoking a reaction in individuals affected with tuberculosis, a property that renders it a useful diagnostic agent, particularly in pearl-disease of cattle. In referring to this subject, Koch takes occasion to deny emphatically that a mobilization of bacilli occurs during the use of tuberculin.

The continued injection of tuberculin is capable of inducing an immunity, but this extends only to the bacillary toxin, not against the bacillus itself. Another unfortunate circumstance is the loss of reaction to tuberculin before a complete cure has been attained; relapses occur during which the reaction returns.

The necessity of finding an antibacterial substance thus remained. By treating the bacilli with a 10-per-cent. sodium hydrate solution Koch obtained an alkaline extract (T A) which produced reactions very similar to those of tuberculin, except

that they were briefer in duration, while the reactive power of the organism persisted longer; the results, too, were more constant.

But the preparation possessed the disadvantage, dependent on the presence of the bodies of dead bacilli, of producing abscesses. On removing the bacilli by filtration the substance approached tuberculin in its action, but being less stable was inferior to the latter.

Koch next conceived the idea of mechanically reducing the bacilli to a detritus capable of absorption by the tissues. He had found that the bacilli contained two fatty acids which constituted a protective envelope and prevented absorption.

The first essential was the destruction of this fatty substance. This was secured by triturating the bacillary mass in an agate mortar with an agate pestle; it was then taken up with distilled water and submitted to centrifugation. In this way an upper opalescent but transparent layer (T O) and a muddy residue were obtained. The latter was dried, triturated, and centrifuged; the residue from this was similarly treated. By this process a series of clear fluids, which from the second onward presented no difference, and were collectively termed T R (residual tuberculin). Both preparations are readily absorbable, and neither produces abscesses. Further researches demonstrated that T O contains the substances soluble in glycerin, T R those insoluble, whence the former resembles tuberculin, and especially T A, but is only feebly immunizing, while T R possesses marked immunizing power.

In employing it, it is not necessary, as in the case of tuberculin, T A, or T O, to produce a reaction, but it is important cautiously to render the patient rapidly insensible to progressively larger doses. T R contains all the immunizing factors of cultures of the tubercle bacillus, the proof being that the subject immunized with it no longer responds to large doses of tuberculin or T O. For the preparation of T R it is necessary to use young, highly virulent cultures. The immunizing substances are conserved by the addition of 20 per cent. glycerin.

Administration and dosage are simple. The injections, as in tuberculin, are given beneath the skin of the back. The fluid contains ten milligrammes of solids per cubic centimetre, and before using is diluted with saline solution; the inaugural dose is $\frac{1}{5000}$ milligramme. The injections are repeated every second day, and the dosage is gradually increased. Koch has generally pushed it to twenty milligrammes.

He was able to render guinea-pigs so completely immune that they were able to withstand inoculations of virulent bacilli. The point of inoculation presented no changes, the neighboring lymph-glands were generally normal, and even when slightly swollen were free from bacilli. Immunization required from two to three weeks. In infected animals treated with T R regressive changes were always observable in the tuberculous foci.

In the case of human tuberculosis the remedy is of little use in advanced stages or in those in which secondary infection has occurred.

In lupus, Koch has always seen a more marked improvement than that yielded by ordinary tuberculin or by T A. It is too early, however, to speak of "cure." Violence in reaction, infiltrations in the region of the pulmonary lesions,—common phenomena under the use of tuberculin,—were not observed. The only local alteration consisted in a transitory increase of crepitant râles; a very favorable influence was exercised on the fever.

In conclusion, Koch states his belief that everything that is possible of attainment with cultures of the tubercle bacillus can be attained with these preparations. It is possible, however, that combinations of T R with T O, or serums derived from

T O or T R, in the preparation of which he is at present engaged, may give better and more rapid results. [By intrusting the manufacture of his preparations to a commercial house and apparently delaying the publication of his article from November 14, 1896, the date it bears, to April 1, 1897, Robert Koch has subjected himself to the righteous criticism of all men to whom *salus populi suprema lex*, and both the French and his own countrymen are speaking of his action in reproachful tone. We hope that he will vouchsafe a satisfactory explanation.]

Teratoma of the Tunica Vaginalis.

Koslowski (*Virchow's Archiv*, cxlviii, Heft 1, p. 36) reports an interesting teratoma of the tunica vaginalis testis removed from a boy 1 year and 9 months old. The tumor had no connection with the testicle, was surrounded by a fibrous capsule, and had attained the size of a plum. Microscopic examination showed the presence of cysts and tubules lined by columnar epithelium and resembling the tubules of the rectum; cysts with ciliated epithelium; and cyst-like spaces, the walls of which had the structure of the skin, showing epiderm, hair and hair-follicles, sebaceous and sweat-glands.

Parts were also found resembing more complicated organs, as, *e.g.*, a chambered structure suggesting the heart. Cartilage and nerve-cells arranged in the form of ganglia were likewise present. The tumor represents an embyro, the parts of which have, so to say, been mixed and have remained in the earliest developmental stage.

[This tumor is well explained on the "parthenogenetic" theory of Wilms.]

The Cause of Mumps.

At a session of the Verein für innere Medicin of Berlin, held on March 29, 1897 (*Berliner klinische Wochenschrift*, April 12, 1897), Michaelis described the micro organism found last year by von Leyden in the secretion of the parotid, obtained by catheterization of Stenon's duct, and reported researches carried on by him (Michaelis) and Bein. The organism is morphologically and culturally characteristic; it is a motile diplococcus, resembling in form, position in cells, and staining properties, the gonococcus. It grows on ordinary media, also on ascitic fluid and milk, which last is curdled by it. Inoculation of animals, even direct injections into the parotid and the testicle, were unsuccessful. The coccus possesses a very slight virulence.

A Case of Myosarcoma of the Small Intestine.

Babes and Nanu (*Berliner klinische Wochenschrift*, February 15, 1897) report a case of this kind. The specimen was obtained, by operation, from a man aged 30 years, and was as big as two fists. Microscopic examination showed that the growth took its origin from the muscularis, and was produced, the authors believe, by a sarcomatous transformation of the muscle-cells. Diagnostically important is the fact that this form of tumor in the present case and in three others recorded occurred in the fourth decennium, cancer being more frequent later in life. Metastasis usually takes place early in sarcoma of the small intestine.

MISCELLANEOUS.

THE UNIVERSITY OF PENNSYLVANIA AND ITS DEPARTMENT OF MEDICINE.

By Charles Winslow Dulles, M.D.,

Lecturer on the History of Medicine in the University of Pennsylvania.

Nearly one hundred and fifty years ago (in 1749) Benjamin Franklin published a pamphlet called a "Proposal relating to the Education of Youth in Pensilvania." In this pamphlet he urged the foundation of an academy, to be conducted on lines suggested by his own practical mind and education. His proposal, however, proved to be a nucleus around which crystallized a much larger scheme of education under the management of men whose intellectual training had been more liberal than that of Franklin, among them such distinguished Philadelphians as James Logan, Lloyd Zackary, William Shippen, Philip Syng, Phineas Bond, Richard Peters, Thomas Bond, Thomas Hopkinson and William Coleman, who, with Franklin, were members of the first Board of Trustees that organized November 13, 1749, which may be considered the date of birth of the institution.

These men and their colleagues in that year used for the Academy a private dwelling in Second Street, and secured the building at the S. W. corner of Fourth and Mulberry (now Arch) Streets, that had been erected for religious purposes under the stimulus of Whitefield's preaching, when he visited this country. This building was first formally occupied at the beginning of the year 1751. In 1753 the Academy received a charter from Thomas Penn. In 1754, at the time when the American colonies first had a meeting of their representatives to consult about their common defence and when Franklin presented his famous plan for a union of the colonies, Dr. William Smith came to Philadelphia and became a professor in the Academy, and in 1755, when the institution was chartered as the "College, Academy, and Charitable School of Philadelphia," he was made the first Provost.

A part of his earliest labor for the College consisted in raising for it in Great Britain, under a royal brief from King George III, who was himself a subscriber, a large sum of money, and in securing the sympathy of many persons of influence and learning in the mother country. Under his wise management the College of

Philadelphia presented to its students a scheme of education more comprehensive than that of any other college in the country, and, about the time of the Revolution, attracted to itself students from distant colonies and the West Indies. The position held by the College at this period is shown by the fact that, in spite of the natural opposition caused by the knowledge that some of the Trustees of the College of Philadelphia were known to sympathize with Great Britain, at the commencement which followed the first meeting of the Continental Congress in Philadelphia, the Delegates, on the invitation of the Trustees, went in a body from the State House to the College, and added the lustre of their presence to that interesting occasion. In 1757 the Earl of Loudon, Commander-in-chief of the British forces in America, met some of the governors of the colonies in Philadelphia to consult about public measures, and the students of the College performed a play in their presence; while in July, 1784, the University received the gift of a collection of valuable books from the King of France. Later, in 1790, when the Law School was opened, President Washington and the members of his Cabinet, members of both Houses of Congress, Judges of the Courts, and State and City officials were present, many of them with their wives; and for years when a new Governor arrived in Pennsylvania he received an address from the Faculty and the students of the College. The first commencement of the College was held in 1757, and its work continued for twenty years, when the British occupation of Philadelphia put an end for a year to its regular sessions. In 1779 the intense feeling of the struggle for independence led the Legislature to annul the charter of the College and to establish in its stead an institution chartered under the name of the "University of the State of Pennsylvania," and endowed with the forfeited rights and properties of the College of Philadelphia. But the authorities of the College, recognizing the fact that, in taking away their rights, the Legislature had exercised an act of tyranny, by persistent effort, which was largely aided by the now venerable Franklin, secured in 1789 the passage of a law that partly corrected the wrong they had suffered, reinstating them in their former rights, and confessing that the previous act was "repugnant to justice" and "a violation of the constitution of this commonwealth." Two years later (1791) the rival institutions were happily and harmoniously united under the title of the "University of Pennsylvania," by which title the University has since been known and honored over the whole world.

The act of 1791 was adopted in fulfilment of a provision of the Constitution of 1776, by which it was made mandatory upon the State to maintain at least one university, and it expressed plainly the

intention of the State to forever exercise some control over the management of the University of Pennsylvania, by providing that the Governor of the State should always be President of the Board of Trustees, and that the Trustees of the University should each year lay before the Legislature a statement of the funds of the institution. This relation of the University to the State and of the State to the University is at this time attracting more attention than it has done for a century, and it is expected that in the future the University of Pennsylvania will be much more closely associated with the progress of the great State whose name it bears and which it represents in the field of science and letters than it has ever been before.

The University of Pennsylvania now has in training more than 2800 students, and places within their reach the teaching of 250 professors and instructors in the various faculties. These students represent forty-three States and Territories and twenty-eight foreign countries. The departments include those of the Arts and Sciences, Philosophy, Law, Medicine, Dentistry, Veterinary Medicine, Biology, Hygiene, Botany, Astronomy, and Archeology, while the University has the management of a large Museum now being erected upon its grounds. The separate buildings already erected for the use of the college, of the Library, of the Departments of Medicine, of Veterinary Medicine, of Dentistry, of Hygiene, of Chemistry, and of Biology, for the Wistar Institute of Anatomy and Biology, with the Pepper Laboratory of Clinical Medicine, the great Hospital and Maternity, the Astronomical Observatory, and the magnificent Houston Hall for the social purposes of the students, make a collection that has no equal in the world. The twenty-five buildings and the grounds of the University cover more than forty-nine acres, beautifully situated on the west bank of the Schuylkill River and nearly 100 acres just beyond the limits of the city. The property of the University now amounts in value to nearly $6,000,000, and it received in free donations to its various departments in two years, preceding September 1, 1896, over a million of dollars.

The Department of the University, which for many years did most to win for it fame, is the Department of Medicine. This was established in 1765 at the suggestion of one of the members of the first graduating class in the College, John Morgan, who was, on May 3, made Professor of the Theory and Practice of Physic, and of William Shippen, Jr., who was, on September 23, made Professor of Anatomy, Surgery and Midwifery. To these professors were soon added Dr. Adam Kuhn as Professor of Botany and Materia Medica, and Dr. Benjamin Rush as Professor of Chemistry, while at the same time clinical lectures were delivered to the students of the University

by Dr. Thomas Bond in the Pennsylvania Hospital. The first commencement of the Medical Department was held June 21, 1768, when ten students were given the degree of Bachelor of Medicine, this being the first time that medical degrees were conferred in America.

For many years the Department of Medicine of the University of Pennsylvania attracted to itself, on account of the reputation of its teachers and the excellence of their instruction, a large number of students from all parts of this country and from various Spanish-American countries. This is not surprising when it is remembered that it numbered among its teachers such famous men as Rush, Morgan, Shippen, Kuhn, Bond, Physick, Wistar, Dorsey, Horner, Barton, Hodge, George B. Wood, Gibson, Norris, Pepper, Carson, Leidy, Agnew, Goodell, Stillé, and Penrose,—a galaxy of names that is not equalled in the history of medical education in the United States.

Itself a daughter of the University of Edinburgh, to which it has always been united by peculiar ties, the Department of Medicine of the University of Pennsylvania has in turn been the progenitor of other medical schools that have contributed largely to the fame of Philadelphia as a centre of medical education. In friendly rivalry with these, it has continually enlarged the sphere of its own usefulness and seen with gratification the enlargement of theirs. It was a pioneer in the method of clinical instruction by the fact that some of its most distinguished teachers in the first century of its existence were physicians and surgeons and teachers in the Pennsylvania Hospital, which was established in 1751. It has also been most potent in advancing the standard of medical education to its present high degree in America, lengthening the number of years required of its students and the number of months devoted to study each year, until its students now are compelled to spend full four years within its walls. Since its foundation, more than 11,000 men have gone out from the University to practise the healing art. The present medical class numbers 926 men, and in the Department of Medicine there are eighty professors and instructors. In addition to the admirable facilities for the study of all branches of the science of medicine, including bacteriology, hygiene, and biology, with their special buildings and rich equipments of apparatus, the students and graduates enjoy the clinical opportunities afforded by the Hospital of the University with its magnificent wing devoted to the memory of D. Hayes Agnew, the greatest and noblest surgeon of his day, and by the Maternity, with perfect modern appliances for fifty patients at one time, including opportunity for isolation and privacy during confinement and the early puerperium. The University Hospital treated during the year 1896 nearly 1500 patients in the wards and

more than 11,000 out-patients. It has accommodations for nearly 400 patients and every requisite for securing comfort for the medical patients and safe conditions for operating upon and afterwards treating its surgical patients.

A recent addition to the University buildings is the magnificent Dormitory, open to the students of all the various departments and contributing an element indispensable to the happiest scholastic life. Men who thus live together under the very roof of their Alma Mater feel a peculiar love for her and a special pride in her glory; and never in her history have the undergraduates and alumni of the University of Pennsylvania had greater reason than now for such love and pride, or brighter hopes for her future greatness.

UNIVERSITY OF PENNSYLVANIA COMMENCEMENT WEEK, JUNE 4 TO 9, 1897.

Friday, June 4.—8 P.M.: Annual commencement exercises of the Philomathean Society, College Chapel.

Saturday, June 5.—8.15 P.M.: Annual junior oratorical contest, Houston Hall.

Sunday, June 6.—7.45 P.M.: Baccalaureate sermon to the graduating classes of all departments at St. Stephen's Church, Tenth above Chestnut Streets, by the Rev. Elwood Worcester, D.D. (Seats will be reserved for trustees and members of faculties until 7.40 P.M.) Members of the graduating classes will assemble in the Parish House adjoining the church (entrance on Tenth Street), at 7.30 P.M. sharp.

Monday, June 7.—10 A.M.: Class day exercises of the graduating class of the college, Chestnut Street Opera House. Valedictorian, Mr. John Dennis Mahoney; historian, Mr. Lawrence Hochstadter Marks; prophet, Mr. Frank Thomas Woodbury; poet, Mr. Arthur Spayd Brooke; presenter, Mr. Horace Mather Lippincott; for further information and seats apply to Mr. Charles Mortimer Montgomery, chairman, University Dormitories. 3.30 P.M.: Lecture on "International Law" by the Hon. Frederic R. Coudert, College Chapel, followed by a reception in the Library; for further information and cards of admission apply to Dr. William Draper Lewis, 116 South Fifth Street. 6.30 P.M.: Reunion and banquet, Class of '87 Medical, at Willow Grove; for further information apply to Dr. B. Franklin Stahl, 1502 Arch Street. 7 P.M.: Reunion and banquet, Class of '77 Medical; for further information apply to Dr. John H. Musser, 1927 Chestnut Street. 7 P.M.: Reunion and banquet, Class

of '92 Medical, at the Hotel Stenton, Broad and Spruce Streets; for further information apply to Dr. Charles H. Frazier, 133 South Eighteenth Street. 7.30 P.M.: Ivy planting exercises, College Campus. Orator, Mr. Walter Stewart Cornell; poet, Mr. John Dennis Mahoney. Songs by the Glee Club. For further information apply to Mr. Charles Snyder Reeve, chairman, 1708 Jefferson Street. 9 P.M.: Senior promenade in Houston Hall; for further information and tickets apply to Mr. Frederick Basil Miles, chairman, 258 South Eighteenth Street.

Tuesday, June 8.—Alumni day. 11.30 A.M.: Annual meeting of the General Alumni Society, Houston Hall; for further information apply to Dr. Ewing Jordan, 133 South Twelfth Street (room 701). 1 P.M.: Luncheon for Alumni of all departments in the Library. Prominent speakers will be present. For further information and cards of admission apply to Mr. John C. Bell, 1001 Chestnut Street. 4 P.M.: Base-ball at Franklin Field; Georgetown *vs.* Pennsylvania. Tickets at Spalding's 1216 Chestnut Street. 4.30 P.M.: Annual exercises of the Phi Beta Kappa Society, College Chapel. 7 P.M.: Annual meeting and banquet of the Society of the Alumni of the Department of Dentistry. For further information apply to Dr. Luther M. Weaver, 7103 Woodland Avenue. 7.30 P.M.: Annual meeting and banquet of the Society of Alumni of the Department of Medicine. For further information apply to Dr. Roland G. Curtin, 22 South Eighteenth Street. 7 30 P.M.: Tenth annual reunion and banquet, Class of '87 College, in the Library. For further information apply to Mr. J. Somers Smith, Jr., 212 South Fourth Street. 8 P.M.: Annual commencement exercises of the Zelosophic Society, College Chapel. 8.15 P.M.: Performance of "Very Little Red Riding Hood," by the Mask and Wig Club, at the Chestnut Street Opera House, for the benefit of the University Crews. For further information apply to Mr. J. Warren Coulston, Jr., 310 Quince Street.

Wednesday, June 9.—Commencement day. 9.45 A.M.: The graduating classes will form by departments in College Hall. 10 A.M.: The Governor and Staff, the Mayor, the Provost, Trustees, and Members of Faculties will assemble in room 116, College Hall. 10.15 A.M.: The procession to the Academy of Music will move as follows: First Troop Philadelphia City Cavalry (Governor's Escort), the Governor and Staff, the Mayor, the Provost, Trustees, Members of Faculties, and Graduating Classes. 11 A.M.: One Hundred and Forty-first Annual Commencement, marking the 157th year of the University's existence. Orator of the day, Hon. Wayne MacVeagh. Conferring of Degrees in Course in Arts, Science, Laws, Philosophy, Medicine, Dental Surgery, and in Veterinary Medicine. Conferring

of Honorary Degrees. Academy of Music. The stage will be reserved for University officials and guests of the University. The parquet will be reserved for the graduating classes. 11 A.M. to 2 P.M.: Annual election for members of the Central Committee of the Alumni-Poll in the central lobby of the Academy of Music. Dr. Thompson S. Westcott, judge of election. 8 P.M.: Annual meeting of the Society of the Alumni, Houston Hall, followed by collation in the Library. For further information and tickets apply to Mr. Gregory B. Keen, treasurer *pro tem.*, University Library. 8.15 P.M.: Performance of "The Rivals," by the Garrick Club, at the Broad Street Theatre. For further information and tickets apply to Mr. H. B. Mingle, University Dormitories.

The Twelfth International Medical Congress.

Chicago, Ill., April 3, 1897.

Editors of University Medical Magazine.

Dear Sirs,—We believe that the comfort of those American physicians who, with their relatives and friends, intend visiting Moscow during the meeting, next August, of the Twelfth International Medical Congress, will be greatly enhanced and the journey itself rendered more interesting and pleasant, as well as more economical, by proceeding as one party, instead of travelling singly or in small groups. Acting on this belief we have secured considerable reductions in the ordinary steamship, railway, and hotel rates, and have succeeded in arranging an itinerary with the well-known Tourists' Agents, Messrs. Cook & Sons. They assure us that the charges are as low as is compatible with first-class service throughout the trip.

An educated conductor will accompany each section of the party and the journey may be broken at almost any point, to meet emergencies.

Very truly yours,

N. Senn,	D. R. Brower,
Casey A. Wood,	J. B. Murphy,
Harold N. Moyer,	D. A. K. Steele,
Eugene S. Talbot,	B. T. Whitmore.

BOOK NOTICES.

ANOMALIES AND CURIOSITIES OF MEDICINE. Abstracted, Classified, Annotated, and Indexed by GEORGE M. GOULD, A.M., M.D., and WALLER L. PYLE, A.M., M.D. With 295 illustrations in the text and 12 half-tone and colored plates. Philadelphia: W. B. Saunders, 1897. Pages 968.

Some one has said that "system is a great classifier." A few years ago had any been asked to give a classification of the curious and unusual in medicine it would probably have been pronounced an impossible undertaking. The present magnificent work of Drs. Gould and Pyle demonstrates how unfounded such an assertion would have been. There is system in every phase of nature, the usual as well as the grotesque, and the apparent incongruities of nature are, in reality, all founded upon rational and well-established laws. This statement is amply verified in the pages of this unique volume which contains, in beautifully systematic and scientific order, much that is of interest, not only medically but generally. There is absolutely nothing that is open to unfavorable criticism, while far more could be said of its attractive and valuable features than the space allotted to any review would permit. No obtrusive and unsubstantiated theories offered in explanation of this or that phenomenon mar the inherent value of the book. Each group of cases stands for itself, though wisely and suggestively placed, and presented as they are, as we have already noted, in a scientific sequence they form in their entirety a ready work of reference to the seeker after the bizarre in any of the branches of the medical science. To the professional lecturer, whatever be his subject, the book must inevitably become invaluable, and especially is this true of the medico-legal expert who from the knowledge herein derived may the more readily reach a solution of many of those perplexing problems that so often confront him. Undoubtedly the book has been designed to meet a long-felt want, and to state that the aim of the authors has been successfully accomplished would but too feebly express the truth. A glance at the subject-matter will more clearly reveal the scope and tenor of the work. The history and literature of the various deformities and anomalies that may be and have been encountered is given fully but concisely, and under the various departments mention is made of the most famous historic instances. The numerous plates and wood-cuts are interesting reproductions of the noted anomalies in history, and the foregoing features in combination with an extensive and complete index and a full reference list and bibliography covering 847 entrances constitute a most complete history of medical and surgical curiosities. Genetic, prenatal, and obstetric anomalies, prolificity, major and minor terata, anomalies of stature, size, and development, longevity,

physiologic and functional anomalies, surgical anomalies of the head, neck, extremities, thorax, abdomen, and genito-urinary system, anomalous types, and instances of disease, anomalous skin-diseases and nervous and mental diseases, historic epidemics,—what a rich field for research and interesting reading does the foregoing list afford, and yet this gives but a limited idea of the contents of the book. Drs. Gould and Pyle have evolved in this volume a monumental work of industry and patience and skill, and have contributed a priceless addition to the medical literature of the world.

The X-Ray or Photography of the Invisible. By William J. Morton, M.D., in Collaboration with Edwin W. Hammer. New York: The American Technical Book Company.

The authors have explained the different parts of a Röntgen apparatus and the principles which underlie its use in a manner that is easily comprehended and at the same time thoroughly practical. The subject is exciting so much attention at present that this book cannot fail to interest as well as instruct the reader. The value of the work is enhanced by a translation of Professor Röntgen's original communication before the Würzberg Physico-Medical Society, December, 1895, and a description of some experiments with the Röntgen rays by Thomas A. Edison. A number of excellent reproductions of skiagraphs of interesting conditions taken by Dr. Morton are appended.

Manual of Chemistry. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Text-Book specially adapted for Students of Medicine, Pharmacy, and Dentistry. By W. Simon, Ph.D., M.D., Professor of Chemistry in the College of Physicians and Surgeons, Baltimore, etc. Philadelphia: Lea Brothers & Company.

The fifth edition of this popular chemistry appears with many changes and additions which have been made in order to bring the subject-matter fully abreast of the times. The general plan of the work remains the same as heretofore. Among other changes noted are those introduced to bring the work in harmony with the new Pharmacopeia. The author has not seen fit to adopt the recommendations of the chemical section of the American Association for the Advancement of Science in the matter of orthography, a position with which we find ourselves at present in entire accord. The metric system is employed throughout, as it should be.

An important feature of this work are the plates illustrating the distinguishing color reactions of a large number of substances used in medicine. In the present edition these have been improved, and a new plate has been added which illustrates the chemical behavior of carbolic and salicylic acids, antipyrin, acetanalide, and other benzine derivatives.

Dr. Simon's work fulfils well its purpose as a reliable and satisfactory text-book for students of medicine, pharmacy, and dentistry.

THE DIARY OF A RESURRECTIONIST, 1811–1812. By JAMES BLAKE BAILEY, B.A., Librarian of the Royal College of Surgeons, England. London: Swan Sonnenschein & Co., 1896.

While this little book cannot be said to fill "a long felt want," it describes one phase of medical history that is scarcely known to the younger members of the profession that is nowhere else presented with the same fulness and accuracy. The author has given us an actual record of the doings of one gang of "resurrection men" in London. The genuineness of the "diary," it is said, does not admit of doubt. It was presented to the Royal College of Surgeons of England by the late Sir Thomas Longmore, who, in his earlier days, was dresser to Bransby Cooper, and who assisted the latter in writing the "Life of Sir Astley Cooper."

Many of the references to resurrectionists that are to be found in earlier works are either entirely fictitious or grossly exaggerated, and Mr. Bailey deserves the thanks of the profession for giving us such an interesting and at the same time true account of a practice that has now, fortunately, ceased to exist.

A short history of the events which preceded the passing of the Anatomy Act is also presented.

TO CONTRIBUTORS AND SUBSCRIBERS.

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JULY, 1897.

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20 JUL 97
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THE SCHOTT OR NAUHEIM TREATMENT.[1]

By James Tyson, M.D.,

Professor of Clinical Medicine, University of Pennsylvania.

At the foot of the Johannesberg, the northeastern spur of the Taunus range in Northern Germany, lies the picturesque town of Nauheim. It is situated on the edge of a fertile plateau, known as the Wetterau, still 450 feet above the level of the sea, and which extends eastward to the river Main. It is within three-quarters of an hour by rail of Frankfort-on-the-Main, and within two hours of the more famous resort of Homburg. The town is especially pretty from the railway station, barring the lofty "gradirhäuser" or salt-evaporating houses, which are rather unsightly. The approach to it from the station is through a spacious park, handsomely laid out, and well supplied with all the sources of recreation and amusement, which so characterize the German spa. On each side of the park are numerous attractive villas and cottages, which with the larger hotels accommodate the immense number of visitors who annually flock to the springs for the benefit of their health. Nauheim or Bad Nauheim, as it is more accurately called, has a permanent population of about 3000, while the annual number of visitors exceeds 12,000,—14,136 in 1895.

The springs themselves lie in the centre of the park, near the banks of the little river Usa, far beneath the level of which the waters rise and gush forth in massive, foaming streams, which ascend to a considerable height, in one instance (Friedrich Wilhelms Quelle) to fifty-six feet. The underground streams which give rise to the water are

[1] Lecture delivered at the University Hospital, April 29, 1897.

reached by boring to a depth of from 500 to 2600 feet, at some distance on either side of the stream.

The springs are known by numbers, which indicate the borings, as well as by names, which have been given them from time to time. The chief are the Friedrich Wilhelms Quelle, or No. 12; the Grosser Sprudel,[1] or No. 7; the Gas Quelle, or No. 11; the Kur-Brunnen, Karls-Brunnen, and Ludwigs-Brunnen. They are conducted to five bath-houses in which are provided nearly 200 bath-rooms with more than as many tubs. The baths are under government control, and, as is usual under such circumstances, the arrangements are systematic and convenient and the attendants are thoroughly trained to their work.

The waters are mainly used for bathing, but to a limited extent the Kur-Brunnen, the Karls-Brunnen, the Ludwigs-Brunnen, and the Schwalheimer-Brunnen also serve as drinking waters,—the first two mainly. The bathing waters are warm, the temperature ranging from 82° to 95½° F. They were first employed for the latter purpose shortly prior to 1835, and in the course of the following twenty years they acquired a considerable reputation in the treatment of gout, rheumatism, rickets, scrofulous affections, and diseases of the spinal cord. It was not until after 1857, when Professor F. W. Beneke, of the University of Marburg, became physician to the baths, that it was shown by him that not only could rheumatic cases complicated with heart-disease use the baths with impunity, but that the cardiac affections were also benefited by them. He wrote several articles upon their use between the years 1859 and 1872, at which last date the popularity of Nauheim may be said to have commenced. Professor Beneke, who died in 1883, continued as physician to the baths until 1866.

August Schott, of Frankfort-on-the-Main, began the study of these baths in 1871, and published in 1880 the most exhaustive and valuable of the early papers as to the effect of the baths upon the heart. His untimely death, in 1881, left his brother Theodore the leading physician at Nauheim, and to him most patients are consigned. Other intelligent physicians, however, reside there and are thoroughly competent to direct the treatment.

The constituents of these waters, and particularly those of the bathing springs and the two drinking springs alluded to (Kur-Brunnen and Karls-Brunnen), are chloride of sodium and chloride of calcium, carbonate of calcium and iron, with a large proportion of carbonic acid. Roughly speaking, the Friedrich Wilhelms Quelle, or No. 12, contains twenty-nine parts in 1000 of chloride of sodium, three of chloride of

[1] The Germans apply the term *Sprudel* to any gaseous spring which issues with sufficient force to leap up from the ground.

calcium, and three of bicarbonate of calcium. The Grosser Sprudel, or No. 7, contains twenty-two parts of chloride of sodium, two parts chloride of calcium, and two of bicarbonate of calcium. The Gas Quelle, or Spring, No. 11, contains seventeen parts of chloride of sodium, one part of chloride of calcium, and two of bicarbonate of calcium. Of free carbonic acid gas, the first and third named springs contain one part, equivalent to 578.9 cubic centimetres and the second three parts, equal to 1340 cubic centimetres. There are many other less important constituents.

The course commonly pursued is to begin with the waters of the Grosser Sprudel spring, or No. 7, which has a temperature of 88.8° F., but the first baths are taken in water from a receiving basin whence considerable of the carbonic acid has been dissipated, while a considerable precipitation of the other salts has taken place, so that the water appears as a turbid, dirty-yellow fluid. Its temperature is raised from 92° to 95° F. Sometimes a less concentrated bath is recommended in the beginning, containing only 1 per cent. of sodium chloride and 0.1 calcium chloride. The strength of the baths is gradually increased by adding different proportions, one, two, three, or more litres of "mutterlauge," the uncrystallizable mother liquor, or waste product from the neighboring salt works, the Gradirhäuser, at which are made large quantities of table-salt. The mutterlauge is rich in chloride of calcium and bromine. As the bath is concentrated the temperature is gradually lowered a degree or two, and the duration of the bath is increased from eight to fifteen and twenty minutes. At this stage the No. 7 or No. 12 is used in the natural state,—that is, as derived directly from the spring. They are therefore clear. In No. 7 a large amount of carbonic acid is retained, keeping the iron in solution. The carbonic acid adheres to the skin of the body in millions of little bubbles, which reaccumulate the moment they are rubbed off. Their effect is to produce a decided rubefacience and an agreeable feeling of warmth. This permits also, without discomfort, a lowering of the temperature, which is never, however, reduced below 80° F.; generally to 82° or 83°. The last stage of treatment consists in the use of the Sprudel-Strom bath, in which the water of No. 7 and No. 12 is used as it forcibly enters the basins, and is promptly carried out again, so that the patient is bathed, as it were, in a stream of moving water, the effect of which is said to be delightfully exhilarating and comparable to surf-bathing. At first the bath is omitted every second or third day, afterwards every fourth or fifth day. It is thus that a course of about twenty-one baths occupies a period of about four weeks.

After the bath the patient is well rubbed and directed to lie down for an hour. Some light nourishment, light hot bouillon, hot milk, or

tea may also be administered at that time with advantage. It is not unusual, also, to take what is known as an after-cure,—that is, a sojourn of a few weeks at some quiet, healthful resort, moderately stimulating in its atmosphere, previous to returning to the usual life. Such places are the Black Forest, the mountains of Northern Germany, or similar localities in Switzerland, not exceeding 3000 feet in height. Further, many patients return annually for several years with a view of keeping up the beneficial effect.

The immediate effect of the baths is a diminished pulse-rate, the heart-sounds are intensified, the respirations are diminished in frequency, and especially the dilated heart is reduced, under favorable circumstances, to almost its natural limits. The effect is also to increase the action of the kidneys and that of the skin. These effects are ascribed to the carbonic acid, to chloride of sodium, and chloride of calcium. In three or four days, says Mr. Bezley Thorne, they are apparent in a free flow of urine, which may continue for days and weeks; metabolic changes are accelerated and improved; the deep-seated organs, especially the liver and pelvic viscera, are relieved of congestion, while the heart, relieved of its burden, and contracting on its contents, fully and without perturbation derives from its improved coronary circulation material for the repair of its weakened or damaged tissues.

In explanation, it is thought stimulation is made through the centripetal nerves on the cardiac and vasomotor centres, through which the nutrition of the heart, and, indeed, of the whole body, is improved. It is supposed by Schott that this effect is increased by the imbibition, at least into the superficial layers of the skin, of the salts by which a more prolonged stimulation is kept up. In a word, the effects of these baths are said by those who have watched them to be marvellous and incredible to any one who has not observed them. A slight sense of oppression to breathing is sometimes present in the course of administration of the first two or three baths, so the patient should not be discouraged thereby. It is described by Dr. Richard Greene, of London, who was himself treated at Nauheim, as a sensation of "girding" by hoops applied to the thorax.

The Home-Made Baths.

It would be hardly worth while to occupy so much time in a consideration of these baths if it were not possible to provide a substitute much more conveniently available than the baths at distant Nauheim. It is greatly to the credit of the brothers Schott themselves that they declared that it was not necessary for a patient to go to Nauheim to get

a very large proportion of the advantages of these baths, most of which, they say, may be obtained from artificial baths prepared at home. These are made by dissolving chloride of sodium and chloride of calcium in water, to which carbonic acid is added by the decomposition of carbonate of potassium and hydrochloric acid. In severe cases it is suggested to commence with a strength of 1 per cent. of sodium chloride or three pounds to a bath of forty gallons, gradually increasing to 2 or 3 per cent., or six to nine and eleven pounds to the bath. The chloride of calcium should at first be used at 0.2 per cent., or six ounces, approximating No. 7 spring, increased to 0.3 per cent., or nine ounces, that of No. 12, and ultimately 0.5 per cent., or twelve ounces, to forty gallons. Three degrees of effervescence are recommended by W. Bezley Thorne, who has made these baths a subject of special study, the *mild*, by using a half pound of $NaHCO_3$ to three-quarters of a pound of a 25 per cent. HCL in an ordinary bath; the *medium*, one pound of the former to one and a half of the latter; *strong*, large Sprudel strength, two pounds of sodium bicarbonate and three pounds of hydrochloric acid to the bath. A slight excess of alkali should be used unless a porcelain-lined or paper tub is used.

In preparing the bath the salts, including the right proportion of bicarbonate of sodium, are dissolved and a bottle containing the acid is laid at the bottom of the bath. The stopper is withdrawn and it is moved about from time to time. According to Thorne, by this method the bath is not ready for use until two or three hours. In a second, more rapid method, the stopper of the bottle containing the acid is loosened but retained in position, the bottle then inverted, the stopper withdrawn, and the bottle moved about so as to diffuse a layer of acid as uniformly as possible over the surface. In this way the bath is ready in five minutes. In my experience, if more time is allowed the CO_2 escapes and the bath is practically without it, so that the latter method is the only one by which the effect of the CO_2 can be expected.

The salubrious effects, however, obtained by a visit to Nauheim are of course not obtained when the artificial baths are used at home, but the treatment is also applicable at other places, among which are mentioned Kissingen, Rehme-Oeynhausen, Cudowa, Pyrmont, and Schwalbach. In England the waters of Llangammarch Wells, in Brecknockshire, whose mineral constituents are similar to those of the Nauheim waters, have been availed of, and there seems to be no reason why our own Saratoga Springs, in some of which chloride of sodium and carbonic acid are both present in large proportion, should not be similarly available. Of course, the temperature of these waters would have to be raised and most of the carbonic acid would probably thus be lost, so that it would have to be artificially added.

There are some advantages in addition to those of change and salubrious climate, however, which will always make Nauheim desirable to those who can afford the expense of a visit abroad. These are the natural temperature of the waters, most admirably adapted for the requirements of the warm bath, the large amount of natural carbonic acid, the copious flow of water, and the fact that the physicians at Nauheim are all specialists in heart-disease, while above all the circumstances already mentioned make it possible to secure a degree of training in the attendants which is difficult to secure in this country.

The Exercises.

The effect of the baths is further augmented by the use of certain exercises or therapeutic movements, which have come to be so intimately associated with the Nauheim bath treatment that the whole has come to be known as the *Schott method* of treating heart-disease. These movements are also characterized as resistance movements or *Widerstandsgymnastik.* They were first suggested by Ling, but also further elaborated by the brothers Schott.

These are not as easily described as shown by actual practice. They are, however, less complex than at first thought seems to be the case, if it is remembered that they include every reasonable movement of the arms and legs, such as flexion of the arm on the forearm, the carrying of the arms forward with palms opposed, the carrying of the arms backward, the carrying of the arms with hands clasped over the head and separated up along-side of the head; and in circular movement along-side of the head; the flexing of the thigh on the trunk; of the leg on the thigh; lateral and posterior movement of the body; circular movement of the body; *each one being gently resisted in by the opposing hand of the attendant.* In doing the movements with the legs the patient should support himself by the hand of the other side resting on a chair. In further detail they are thus enumerated:

(1) Movements of the extended arms in three directions: (*a*) From the ordinary position by the sides of the body forward and upward until they reach the temples, and back again; (*b*) from the same position laterally outward and upward to the temples, and back; (*c*) from the horizontal position, with the palms of the hands meeting in front of the body, as far apart as possible, and back. Rotation of the extended arms about their axes as fully as possible, causing pronation and supination.

(2) For the elbow, wrist, and finger-joints the natural flexions and extensions; radial and ulnar abduction and adduction.

(3) (*a*) Flexion of the trunk forward, from a little beyond the erect position, and back; (*b*) lateral flexions of the trunk to right and

left, and back; (*c*) rotations of the trunk on its axis to right and left, and back.

(4) Movements of each extended leg forward and upward, outward and upward, backward and upward, and back.

(5) The natural flexions and extensions of knee and ankle-joints.

The exercises are not used until some very positive effect of the baths is secured, when they are associated with them or added after the baths are discontinued. The effect of these gymnastics are described as identical with those of the baths. The extremities become warm, the breathing is deepened, the sense of oppression is relieved, the pulse becomes slower, the heart area reduced, even the liver, which is so often enlarged in heart-disease as a result of passive congestion, is said to be reduced in size.

A satisfactory *rationale* of the gymnastics is less easily found than for the baths. It has been suggested that the former also exert through the muscular contraction a centripetal effect upon the same cardiac and motor centres as do the baths, and in the same way, by reflection, the advantageous results of nutrition are brought about.

Sir William Broadbent suggests another explanation, as follows: The most important physiological factor is the dilatation of the capillaries in the exercised muscles, continued into the arterioles and arteries by which an additional supply of blood is admitted into them. On the other hand, from the character of the exercises, the compression of the veins, which drives on the venous blood to the right heart, thus causing dyspnea in ordinary exertion, does not take place, whence there is a transfer of blood from the venous to the arterial system, reversing what is the usual tendency in heart-disease,—that is, the accumulation of blood in the lungs. In a word, the important factor is lessened peripheral resistance. Broadbent does not, however, deny altogether the possibility of nervous influence.

In carrying out the gymnastics it is exceedingly important that the patient should not be fatigued, the movements should be made slowly, and the rule of action should be little exertion and no fatigue. No movement is to be repeated twice in succession, and each single or combined movement is followed by an interval of rest. The patient should be carefully watched, and the least suggestion of cyanosis or shortness of breath should be the signal for discontinuing the treatment. In my own experience with the use of this treatment I have associated massage with satisfactory results. The massage may even be performed while the patient is in the bath, and it serves to interest and amuse him.

With regard to contraindications to the treatment, it is admitted that in cases of advanced arterial sclerosis improvement is less likely

to occur, while in aneurism it is said to be positively dangerous. I have not allowed the former condition of sclerosis, as long as there is no calcareous deposit, to interfere with the treatment, and have found that results though less decided are still beneficial.

I am told by patients who visited Nauheim that the Oertel-Terrain cure, or mountain climbing, is also used to a limited extent. This treatment, when cautiously and rationally applied, is undoubtedly also attended with beneficial results, but it requires a high degree of good judgment. It is true of the heart as of skeletal muscles, that judicious, systematic exercise without fatigue strengthens it, while the opposite condition exhausts it. It is especially at the end of the Schott treatment, or after it, where it has been successfully applied, that the Oertel treatment may be cautiously employed.

As an after-treatment, too, the Schott brothers recommend the *Selbsthemmungsgymnastik*, or self-restraining gymnastics, where the patient acts as his own attendant. The restraint is accomplished by the hardening of the muscles of the limbs or groups of muscles which execute these movements, as illustrated by the "muscle" which any one is able to produce by flexing the forearm on the arm and firmly clinching the fist. This same condition can be produced in other muscles and thus the self-resistance made more general while the exercises are practised. It is plain, however, that this demands a severe tax on the patient, and is more liable to be followed by harmful results if unsuccessfully or injudiciously practised.

Dietetics.

Dietetics also receive attention at Nauheim. The muscle-forming food represented by meat is recommended in such quantity as may be easily assimilated, but since many of these cases, especially if attended by arterial sclerosis, are often due to irritating conditions of the blood due to overeating and overdrinking, and it is found that just so much and no more food can be assimilated without embarrassing the circulation, great judgment must be exercised in the regulation of the diet, a lowering rather than a heightening diet being on the whole indicated until the heart has resumed its functionally perfect condition. The truth contained in the last paragraph I want to emphasize. It has occurred to me so often to see a patient with cardiac weakness and its results, including dropsy, improve with a restricted diet and to have the symptoms recur with indiscriminate overfeeding that I have come to insist upon a "starvation diet" as an essential of their successful treatment. Of liquid food not more than four ounces should be permitted at one time. Of course, with a successful removal of the symptoms a very gradual return to a more liberal diet may be permitted.

But it often happens that our ends are frustrated by a too rapid enlargement of the dietary in response to the demands of the now hungry patient.

I have tested quite fairly the Nauheim-Schott treatment in the University Hospital and have obtained most of the results claimed, especially the reduced frequency of the pulse, often from 84 and 90 to 60, the regular forcible cardiac action, diminished dropsy, and to a limited extent the reduction of enlarged cardiac areas. I cannot point, however, to the very extraordinary reduction of area obtained by the English physicians. I have not been able to secure results as definite from the Schott movements.

The movements have a more limited application than the baths, since a condition of their success is the absence of any consequential embarrassment of the circulation and breathing, the occurrence of which in the slightest degree must be followed by their omission. It does, however, happen, as stated by Bezley Thorne, that they may sometimes precede the baths with advantage, as where the patient cannot be removed from the bed, when their cautious use may produce sufficient relief to allow the baths to be instituted at a later date.

Conditions in which the Treatment may be Useful.

What, on the whole, are the conditions in which they may be employed to advantage? They are by no means limited to heart-diseases. Starting out with these, which with the exceptions named may be said to include all cases in which the balance of the circulation is deranged, attended with frequent, feeble, and irregular pulse, dyspnea, engorgement of the venous circulation and its results, including engorgement of the liver and kidneys, with scanty urine. The typical condition, as already mentioned, is the weak heart of cardiac dilatation. Permanent relief to this implies some change for the better in the cardiac nutrition, as the result of which the degeneration of its myocardium is repaired, the *rationale* of which has been given.

Among the conditions not primarily cardiac are mentioned excess of uric acid in the blood succeeding acute rheumatism in the joints or muscles, as well as gout and rheumatoid arthritis.

Anemia, whether chlorotic, malarial, or secondary to drains on the system, especially if associated with more or less dilatation of the heart is said to be benefited. Asthma with, however, little dilatation is also mentioned by Bezley Thorne as a condition always relieved by the Schott treatment, and some very marked cases are reported by him. The same is true of coldness of the extremities with a deep blue or purple discoloration of the hands usually ascribed to feeble circulation. Painful menstruation and habitual headache, especially where asso-

ciated with uric acid, are also mentioned; likewise lumbago. I must add, too, cases of Bright's disease where a failing heart has commenced to add its consequences to those of the renal malady itself.

I cannot refrain from repeating that in almost any one of the conditions named, including Bright's disease with dropsy, massage is a most valuable adjuvant to the treatment. Co-operating first to diffuse the exuded serum and prevent its water logging the tissues of the body, it diminishes also the resistance to the onward movement of the blood and favors the absorption of the effused serum.

TRANSPOSITION OF THE VISCERA OBSERVED DURING LIFE; GREAT ENLARGEMENT OF THE LIVER, PROBABLY DUE TO HYPERTROPHIC CIRRHOSIS.

By H. M. Fisher, M.D.,

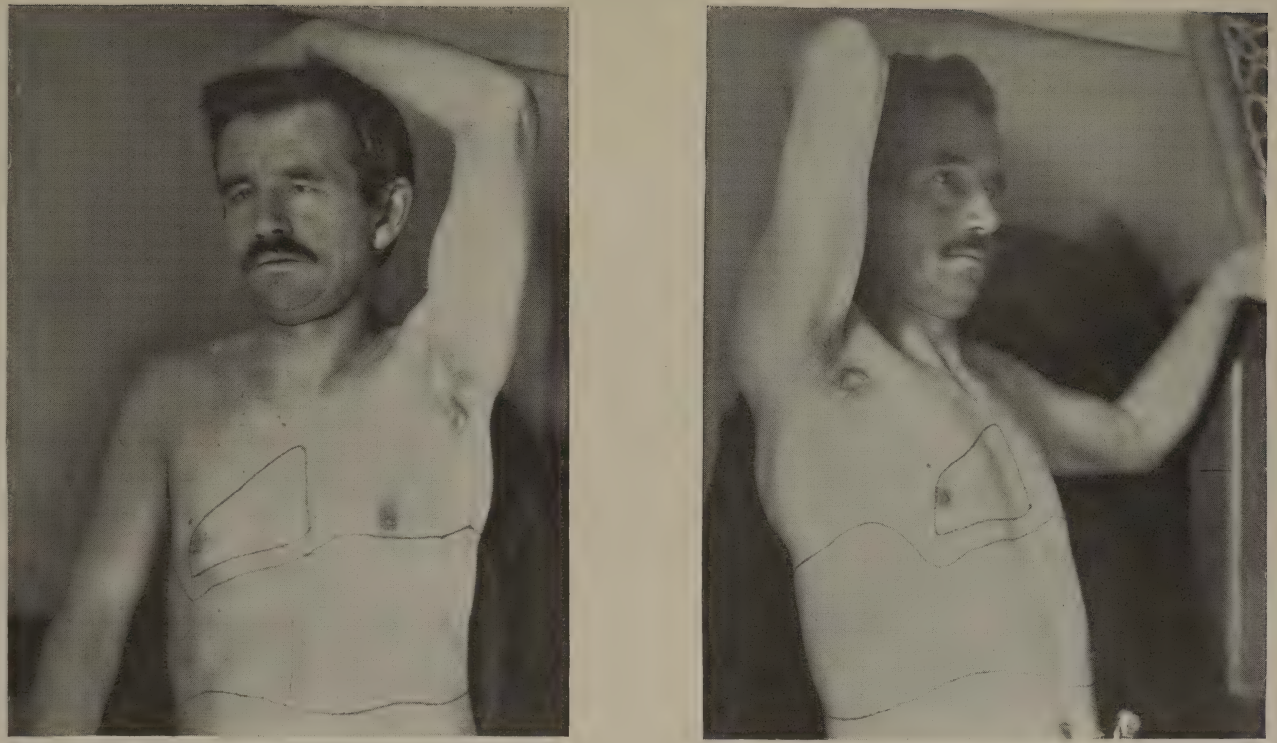
Philadelphia.

William G., aged 44 years, married, a gardener, born in Germany, was admitted to male medical ward at the Episcopal Hospital, November 14, 1896. Patient's father died at the age of 54, of cancer of the stomach. His own health appears, with the exception of an attack of malarial fever ten years ago, muscular rheumatism two years ago, and an uncertain history of pleurisy, to have been uniformly good. He positively denies ever having had syphilis, but admits having at one time indulged moderately in the use of alcoholic stimulants.

Four years ago, while driving a cart or wagon, one of the straps broke, and he was struck in the abdomen by the swingle-tree. Soon after this event he observed that there was a mass below the xiphoid. This has increased steadily in size, and during the past year has become painful upon pressure. He has had occasional slight attacks of jaundice. Beyond this he does not appear to have had any marked symptoms, but in consequence of the pressure of the tumor and pain on exertion he has been unable to work.

Patient is a man of average size and good muscular development. He is not anemic, nor does he present at all a cachectic appearance. There is a slight bulging of the lower fourth of the right thorax and in the epigastric and right hypochondriac regions.

Inspection of the chest shows that there is no apex-beat in the normal position. On the other hand, inspection, palpation, and auscultation show conclusively that the apex-beat of the heart is in the



Transposition of the viscera observed during life.

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fifth right interspace one centimetre outside of the right nippple. The area of precordial dulness, as determined by percussion, shows that the upper and outer limb of the precordial dull triangle forms a more acute angle with the base-line than under normal conditions. In other words, the heart appears to be pushed somewhat upward and outward by the tumors beneath the diaphragm.

Left Chest.—In the mammary line there is slight dulness on percussion, in the fourth interspace,—absolute percussion dulness from the fifth interspace down to the costal margin. In the median line dulness begins at the third costo-sternal junction and extends one and a half inches below the xiphoid cartilage. In the left axillary line dulness extends from the fifth interspace to the costal margin. Posteriorly, the dulness begins at the ninth rib and extends downward a short distance below the costal margin.

Right Chest.—In the mammary line dulness begins just above the sixth rib and extends downward to the base of the chest. In the anterior axillary line dulness is absolute from the fifth interspace to the costal margin. Posteriorly, the dulness is absolute from the ninth rib downward below the scapula. Close to the spinal column on the right side the percussion dulness appears not to be quite so absolute as upon the left side.

The upper limit of dulness between the right mammary and anterior axillary lines is distinctly convex, and is apparently caused by the presence of the spleen, but it is impossible to map out the lateral or lower borders of the spleen, owing to the presence of either the greatly enlarged right (under normal circumstances left) lobe of the liver, or to the presence of a tumor external to the liver.

The abnormal position of the heart was clearly shown in a radiograph of the patient, which was taken by Professor Arthur W. Goodspeed, at the University of Pennsylvania. The radiograph also showed the presence of the abdominal tumor, reaching almost to the umbilicus, the dark shadow being a trifle deeper in situation on the left than on the right side. The radiograph did not, however, clearly indicate an area of deeper shadow in the position which the spleen was supposed to occupy.

The fluoroscope appeared to show, however, an area of deeper shadow from the seventh to the ninth ribs in the right axillary region, which would nearly correspond to the dull area observed in normal conditions over the spleen upon the left side of the body.

Further examination of the patient showed that the heart-sounds were absolutely normal, and that the breath-sounds were also normal.

There seemed to be no reasonable doubt that the tumor within the abdomen was connected with the liver, as it moved with the respira-

tory movements, and neither palpation nor percussion revealed any lack of continuity between the area of which the upper limits are represented in the photographs and the lower dull area encroaching on the abdominal cavity. Whether other organs were involved by the growth was a question of greater difficulty. The patient, however, had at no time presented symptoms of gastric or renal disturbance, and it therefore seemed probable that neither the stomach nor the kidneys had been infiltrated by any morbid growth.

His nutrition was, on the whole, very good and there was no marked anemia. It therefore seemed probable that the spleen was not involved.

With a view to determining the nature of the growth Dr. Richard H. Harte, at my request, made an exploratory incision and removed a small portion of the mass for microscopic examination. I had suspected that the growth was sarcomatous, and thought that if this proved to be really the case, a series of injections of the mixed toxins, according to the method recently recommended by Dr. William B. Coley,[1] might offer him some hope of relief. The portion removed, however, showed no trace of sarcomatous infiltration. It was found to consist of liver tissue in a state of chronic parenchymatous inflammation, with great increase of the interlobular connective tissue.

The capsule of the liver was greatly thickened, and the masses of connective-tissue cells, seen at various points, extending from the capsule and surrounding the portal vessels, seemed to point clearly to an extension of an inflammation from the surface to the interior of the organ.

Under the circumstances, the most reasonable explanation of the growth appears to be that a perihepatitis had been caused by the injury that the patient had received, and that as a consequence of this a secondary parenchymatous inflammation of the organ had been set up.

A brief survey of the literature of the subject shows that the heart and other organs have been frequently found in an inverted or transposed position, though this inversion has, perhaps, in the majority of the recorded cases, only been discovered at the autopsy or in the dissecting room. It is remarkable how often the heart in these cases has been found to present anomalies of structure and conformation. It is also worthy of remark how many of the subjects of this condition have been tubercular.

The cause of transposition of the viscera has, I believe, so far, not been determined satisfactorily. The observations of von Baer, quoted by Professor Allen Thomson,[2] that where, as in the case of the embryo of the chick, the movement of rotation of the embryo has been observed to occur in such a manner as to cause its right side

to lie on the surface of the vitellus, the position of the heart is inverted, has been confirmed by Professor Thomson, who observed the same transposition of the heart in a goose's egg, where the embryo presented its right side to the vitellus. The relative position above alluded to of the embryo to the yolk appears to be the same in mammals as in birds.

Professor Thomson also calls attention to his observations that "in the case of double monstrosity, while the one of the united individuals that is situated to the right of the person looking at them in front is naturally formed, in the other, the heart and non-symmetrical viscera are laterally transposed. Professor Thomson concludes that the transpositions above alluded to must coincide in point of time with the change of position which occurs at the earliest period of formation of the heart and its main blood-vessels, the liver in connection with one of these blood-vessels, and the alimentary canal.

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HYPEREMIA AND HYPERESTHESIA OF THE POSTERIOR URETHRA DUE TO SEXUAL EXCESS.

By H. M. Christian, M.D.,

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The purpose of this paper is to describe under the above title a pathologic condition involving primarily the mucous membrane of the deep urethra and affecting secondarily in many cases the follicles of the prostate gland, dependent for its cause upon some form of sexual excess, either masturbation, excessive sexual intercourse, or prolonged ungratified sexual passion.

The affection of the posterior urethra brought about by the operation of one of the above-named causes, although by no means a rare one, has, singularly enough, received but little attention in the writings of authors on genito-urinary diseases.

In his "Treatise on Diseases of the Male Urinary Organs," 1883,

Gross describes quite a number of cases, presenting for the most part all the symptoms of the affection now under consideration.

But the fact that these symptoms were pronounced and treated by him as due to the presence of stricture in the membranous urethra shows very conclusively that he did not comprehend the true significance of the pathological conditions present in the posterior urethra. As is well-known, the strictures located by Gross in the membranous region were afterwards demonstrated by Dr. J. William White to be "in reality the point of normal resistance to the withdrawal of bulbous bougies offered by the posterior layer of the triangular ligament." Keyes, in his work on genito-urinary diseases, under the title of "Neuralgia of the Vesical Neck," gives what, to my mind, is the only accurate clinical description of this affection to be found in any treatise on diseases of the genito-urinary organs. Owing to the diverse pathological conditions which may be present, it must be evident that no one term can be employed to designate this particular affection.

If we are to use the terms "neuralgia of the vesical neck," it must be understood, as pointed out by Keyes, that the word "neuralgia" is used in the French sense as signifying fuctional disorder, and not necessarily connected with the idea of pain. The title under which this paper is written, while rather cumbersome, seems to me to possess the one merit of describing the lesions present in the disease.

In taking up the consideration of the causes that operate to bring about the affection now under consideration, it may not be out of place to briefly recall a few points in the physiology of the deep urethra and prostate gland. I take it for granted, of course, that the prostate gland is regarded as a distinctly sexual organ. The deep urethra is the seat of sexual orgasm in the male, and under strong sexual excitement the mucous membrane becomes intensely congested, secreting a thin mucoid discharge, which is graphically stated by Keyes to be "analogous to the watering of the mouth of a hungry individual at the sight, smell, or even thought of food."

This physiological congestion is relieved immediately at the time of the orgasm, whether that takes place as a result of sexual intercourse or masturbation. When this, what might be termed sexual congestion of the prostatic urethra, is constantly recurring under the stimulus of inordinate sexual passion, either daily masturbation or excessive sexual intercourse, it is not entirely relieved by the occurrence of the orgasm, and there results a condition of chronic congestion of these parts.

Again, if, as a result of frequent and prolonged ungratified sexual excitement, this physiological congestion persists in the deep urethra unrelieved by the natural process of sexual orgasm, it becomes patho-

logical and acts as a chief determining cause in producing a condition of hyperemia and hyperesthesia of the posterior urethra In other words, under such circumstances, the same evil results to the prostate gland and prostatic urethra as is supposed to occur in the sexual apparatus of women where the orgasm on the part of the woman is not completed, owing to premature withdrawal on the part of the male.

The causes, therefore, of this condition of hyperemia and hyperesthesia of the deep urethra can be enumerated as (1) masturbation, carried to excess, and where the practice has been indulged in for a number of years; (2) excessive sexual intercourse carried on for a long period of time; (3) repeated periods of prolonged and ungratified sexual excitement, including various forms of perverted sexual passion.

Symptomatology.—Two classes of cases are usually seen. First, where the mucous membrane of the prostatic urethra alone is affected, and the symptoms are chiefly those pertaining to an irritable bladder; second, where, in addition to the mucous membrane, the follicles of the prostate gland have become affected, and as a result we have the condition known as chronic prostatitis.

In the first group of cases, where the mucous membrane of the deep urethra is alone involved, the principal symptom complained of is frequent and imperative urination. There is little or no pain during micturition. The urine is clear and passed in a good stream, no hematuria, no dribbling after urination; some slight vesical tenesmus may be present in some cases; urination varies from ten to twenty times through the day. As a general rule, patients do not have to rise at night. The two glass test usually shows urine to be clear, and always free from shreds. In a certain number of cases there may be present a condition of phosphaturia or oxaluria. Examination of the deep urethra with a bulbous bougie reveals a condition of marked tenderness in this region, patients very often fainting from the pain caused by the examination. As a rule, nothing is found on the shoulder of the bulbous bougie upon withdrawing the instrument. In some exceptionally severe cases some blood may be found on the bougie. Examination with the urethroscope in the main is not very satisfactory. Very few patients will submit to having the instrument passed into the deep urethra, and where it has been possible to introduce the tube its presence has provoked such a hemorrhage that the field could not be kept sufficiently free from blood to enable one to get a satisfactory view. Rectal examination is negative.

The greatest number of cases of this affection is found in the second group, where, in addition to the mucous membrane, the follicles of the prostate gland are involved and we have present all the well-

known classical symptoms of chronic prostatitis. These are frequent, and imperative urination, forked stream, dribbling after micturition, pain at end of penis and in perineum at close of urination; vesical tenesmus quite marked. First portion of urine passed is clear; the second portion contains comma-shaped prostatic shreds. There is prostatic discharge at stool, which discharge at times will be found to contain spermatozoa, constituting the condition known as "defecation spermatorrhea." In addition, there is present a condition of general sexual neurasthenia, as evidenced by imperfect sexual intercourse together with premature ejaculation. Examination with the bulbous bougie reveals great tenderness in the *pars prostatica*, moreover, the shoulder of the instrument on being withdrawn is usually found covered with prostatic discharge. Rectal examination shows the prostate to be somewhat enlarged and very soft. The urine passed after massage of the gland will be very cloudy and contains comma shreds in great abundance. This urine examined under the microscope will be found to contain prostatic bodies in large quantities.

Diagnosis.—In forming a diagnosis of this affection the following important points should be borne in mind: (1) The absence of any history of recent gonorrhea and subsequent chronic posterior urethritis; (2) the patient gives a history of prolonged and excessive sexual abuse; (3) the presence of frequent and imperative urination, accompanied in many cases with symptoms of chronic prostatitis and sexual neurasthenia; (4) examination with a bulbous bougie reveals very clearly the presence of hyperemia and hyperesthesia of the deep urethra; (5) negative results from examination for stone or stricture.

The general practitioner of medicine is very prone to apply the term "irritable bladder" to this condition. It is hardly necessary to call attention to the loose and faulty character of such a diagnosis.

Treatment.—The first and most important indication in the treatment is the absolute discontinuance of the exciting cause, whatever form of sexual excess that may be. All forms of sexual excitement must be avoided. Bicycle riding must be positively interdicted. Internally, to reduce the tendency to sexual excitement and relieve congestion of the prostate and *pars prostatica*, I have found the following prescription most valuable:

℞ Potassii bromid. . . . . grs. xv;
Extract. ergot. fluid.,
Tincturæ hyoscyami . . . . . āā f℥ss;
Aquæ camphoræ . . . . . q. s. f℥ss.

This quantity should be given three times daily. Cold sponge-baths should be taken at night.

The most important feature in the treatment of these cases, and one upon which I rely most, is that which is applied locally, in the form of irrigation of the deep urethra with a solution of silver nitrate, 1–4000, increasing to 1–2000. The solution is passed into the bladder from a fountain syringe by means of a soft rubber sterilized catheter. About eight ounces of the solution is allowed to enter the bladder; the catheter is then slowly withdrawn, the solution still flowing through the eye of the instrument and irrigating the deep urethra as it is withdrawn. As the point of the catheter passes the compressor urethræ muscle the solution flows out anteriorly along its sides and the catheter is immediately withdrawn from the urethra, as there is no necessity for irrigating the anterior portion. The patient now expels by urination the silver solution which was allowed to enter the bladder, and by so doing still further medicates the deep urethra. This treatment should be repeated in four days. It may be still further supplemented by the passage of cold full-sized sounds.

In those cases where there is developed a chronic prostatitis the use of deep instillations of nitrate of silver, one and two per cent., have proved of great service. In very obstinate cases repeated blisters of cantharidal collodion on the perineum have seemed to me to be of great value. Applications to the deep urethra direct by means of the urethroscope have never in my hands been of any value; in fact, they have always appeared to do much more harm than good.

In summing up the various means of treatment I would state the following as giving the best results,—viz., bromide of potassium and ergot internally. Irrigation of the deep urethra, in the manner described, every three or four days, together with the occasional passage of full-sized sounds. Where there is present chronic prostatitis, rectal irrigation with hot water and the daily use of a suppository containing ergotin and iodoform. Under such a plan of treatment I have seen a large number of cases of this affection, some of them very aggravated, cured in from six to eight weeks.

The following cases are taken from the records of the Dispensary for Genito-Urinary Diseases of the University of Pennsylvania, and also from my private case-book. They may, I think, be considered as fairly typical of the disease.

Case I.—J. F., aged 22 years; farmer. Never had any venereal disease; never had sexual intercourse. Masturbated from fifteen to twenty-one years on an average once every day. Present trouble one year's duration. On ceasing masturbation he began to have nocturnal pollutions as frequently as four times a week. Complains mostly of frequent and imperative urination; the calls to urinate being as high as eighteen to twenty times through the day. Does not have to rise

at night. Urine passed in a good stream; no dribbling; no pain, except when he wants to urinate. Urine perfectly clear; contains no shreds.

Examination.—Circumference of penis three and three-fourths inches. Bulbous bougie, 30 calibre, used in making examination passes easily through anterior urethra; no stricture; very tender posterior urethra; patient fainted during examination.

Treatment.—Internally bromide of potassium and ergot as given in prescription above-mentioned. Irrigation of deep urethra, nitrate of silver, 1 : 4000. April 2, 1894, four days after first visit, returns to dispensary much better. Urination, ten times daily. Can hold urine better. Irrigation, silver solution. April 5: urinating ten times daily; not imperative; has had no nocturnal pollutions since first visit. Passed No. 32 sound. Irrigation, nitrate of silver, 1 : 2000. April 10: marked improvement. No nocturnal pollutions; patient urinating six to eight times daily. Can control desire to urinate. Irrigation, nitrate of silver, 1 : 2000; No. 32 sound. Continue bromide and ergot mixture. April 15: urinating about every three hours. One nocturnal pollution since last visit. Passed No. 32 sound. April 30: patient returns after absence of fifteen days; urinating four or five times through the day. Has had two nocturnal emissions since last visit. Ordered internally:

℞ Strychniæ sulph. . . . . gr. ss;
Acid. phosphor. dil.,
Aquæ cinnamomi . . . . . āā f℥iss.—M.
SIG.—One drachm after meals.

May 20: patient entirely recovered; urinating four times daily; no nocturnal pollutions. Deep urethra no longer tender on examination.

CASE II.—L. R., aged 30. Has never had any venereal disease. No history of excessive masturbation. Been married one year. For several years prior to marriage indulged in sexual intercourse generally with prostitutes on the average of three and four times a week. During the year of married life has had intercourse with wife once every night except during her menstrual period. Complains of frequent and imperative urination; imperfect erections. Premature ejaculation on intercourse; some prostatic discharge at stool.

Examination.—Circumference of penis three and one-half inches. No stricture. Very tender posterior urethra. Shoulder bulbous bougie covered with prostatic fluid.

Treatment.—Absolute prohibition of sexual intercourse with wife. Local and internal treatment same as Case I, with the addition of an occasional deep injection of nitrate of silver, one and two per cent.

This case was cured in about ten weeks. When I say cured, I mean that at the end of two months' treatment the bulbous bougie did not, when passed into the posterior urethra, cause any pain whatever. Patient was urinating about five times daily; was having satisfactory sexual intercourse with wife once a week. Erection perfect and no premature ejaculation.

Case III.—A. B., physician. Consulted me some months ago in reference to what he termed an irritable condition of his bladder. Urination was frequent and imperative, averaging three to four times every hour through the day, and two or three times at night. Stream good; no pain; no dribbling; no hematuria; some little vesical tenesmus at close of urination. No history of gonorrhea. Patient tells a tale of remarkable sexual vigor. A few years prior to his visit to me he stated he had been keeping a woman with whom he had sexual intercourse every day for over a year. Since severing relations with this woman, has been in the habit of having pretty regular sexual relations with several women; at the same time keeping up the usual sexual relations with his wife. He further stated that, as a result of long and continued practice, he seemed to have so trained his spinal centres as to have complete control over the sexual orgasm, on his part to such an extent that it could be hastened or deferred just as he desired. As a result of this accomplishment, there was at every sexual intercourse a condition of prolonged sexual excitement, and a consequent unnaturally prolonged congestion and irritation of the deep urethra which was not entirely relieved by sexual orgasm.

Local examination of the urethra in this case showed marked tenderness in the deep urethra; patient nearly fainting under the examination. No stricture. Prostate gland enlarged somewhat, but soft.

Treatment in this case was followed by very gratifying results. After a few irrigations of the deep urethra, patient was able to hold urine for three to four hours with perfect ease. Hyperesthesia of urethra entirely overcome in four weeks.

The above cases are reported as being typical and as illustrating the marked benefit resulting from the treatment employed. During the past eight years I have treated at least one hundred cases of hyperemia and hyperesthesia of the deep urethra. Of all the various methods of treatment employed during this period, the one detailed in this paper has given me the best results. I have notes of twenty cases treated in this manner. Of these sixteen were cured in about eight weeks. Four cases with chronic prostatitis were unimproved.

THE STATISTICS OF MALIGNANT DECIDUOMA.[1]

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To the retention *in utero* of decidual or placental *débris* must be ascribed some of the graver sequences of parturition, be it mature or premature. Given this foreign material in the uterine cavity in any specific case, and it depends upon but a single factor—namely, the entrance or failure of access of pathogenic germs—as to what shall become of it. In by far the vast majority of such instances the result becomes a foregone conclusion. The sanguineous discharges, in part normal after labor, and in very large part abnormal and directly dependent upon the presence of the retained material, together with the existence of numerous abrasions along the parturient canal, furnish the most favorable conditions for the entrance and nourishment of germs, and a putrid odor quickly heralds the work of destruction that is going on within the uterus and vagina. Thus is developed one or other of the forms of puerperal sepsis with which the obstetrician of to-day is more thoroughly acquainted than he was but a decade ago.

If, on the other hand, through the observance of careful asepsis and antisepsis, the pathogenic microbes be excluded, there then results one of a number of rarer terminations of the accident. The non-septic fragments of extraneous tissue, according to the observations of Hartmann and Toupet,[1] who have made an exhaustive study of the subject, may either undergo (1) a slow sclerotic change, hardening and contracting, when they are ultimately discharged as a so-called *placental mole;* (2) there may be a failure of this sclerotic process to occur; but, on the other hand, a vascular connection may be established between the placental tissue and the uterine muscularis, and a distinct evolution occur in the retained chorionic villi, an innocent neoplasm thereby resulting, known as the *benign deciduoma* or true *placental polypus*, which will give rise to irregular and profuse hemorrhages that may even jeopardize the patient's life. After thorough removal by the curette such a growth shows no tendency whatever to recur; (3) the retained tissue may undergo a myxomatous change, and a true cystic disease of the chorionic villi result (the so-called *hydatidiform mole*); (4 and finally) the condition now becoming generally known as *malignant deciduoma* may develop and promptly terminate the patient's life

[1] Read before the Judson Daland Medical Society of the University of Pennsylvania, March 22, 1897.

if it be not subjected to early and appropriate treatment. There is a very intimate, though not fully comprehended, relationship existing between the last two varieties of growth, in each the disease tending to invade and even perforate the uterine wall. This esoteric relationship has been most markedly emphasized in the rapidly growing literature on the subject, and has constituted one of the most intensely interesting features of the pathogenesis of the disease. It is probable that with the exception of the revival of symphyseotomy no subject in obstetrics has excited more general interest than the last-named condition,—namely, deciduoma malignum.

If we were to attempt a definition of this recently recognized neoplasm, we should say it is an exceedingly malignant growth from the pregnant or recently pregnant uterus, composed largely of proliferating decidual or placental tissue, of rapid growth and development, manifesting a marked tendency to the formation of metastatic deposits throughout the tissues and organs of the body, and quickly resulting fatally if prompt and radical measures of treatment be not instituted. A recent impregnation seems to be an essential feature in the etiology of the condition, and it matters not whether this impregnation be carried to full maturity or not. Indeed, the vast majority of the cases recorded have followed a premature termination of the gestation, either by simple abortion or more commonly after a cystic degeneration of the chorion has occurred, as has been already noted.

It is not within the province of the present paper to enlarge upon the pathologic features of the disease. These have been most carefully and minutely studied and described by Williams,[2] Marchand,[3] Spencer,[4] Jones,[5] and others, and for a closer investigation of this portion of the subject the reader is referred to these papers. Mention of the essential and characteristic features alone will be pertinent here. While closely resembling in many respects a sarcomatous growth, it differs from this type of neoplasm by the presence of peculiar and characteristic cells of large size containing nuclei, these cells bearing some likeness to the giant-cells of the myeloid sarcoma, but also closely resembling the true decidual cells of Friedländer, to be found in every normal gestation. It must, therefore, as suggested by Williams[6] in an able paper entitled "Contributions to the Histology and Histogenesis of Sarcoma of the Uterus," be regarded as a compound tumor,—a combination of uterine sarcoma with other, probably decidual, elements. This complex constitution undoubtedly contributes to the malignancy of the growth, for of the entire sarcomatous genus of neoplasmata the deciduoma is undoubtedly by far the most malignant.

This uncertainty in the true pathogenesis of the disease has resulted in the origination of a large number of terms that have been

proposed in a futile attempt to designate the characteristic pathologic feature of the growth, and thereby locate it properly in the category of neoplasmata. Thus, in 1889, Sänger[7] suggested the name of "malignant metastatic deciduoma," and in a later paper,[8] on account of the marked proliferation of decidual cells that characterized the tumor, he calls the disease a "sarcoma uteri deciduo-cellulare." Menge[9] calls it "deciduo-sarcoma uteri;" Klien,[10] "deciduo-sarcoma uteri giganto-cellulare;" and Küstner,[11] "deciduarention-deciduo-adenoma uteri." Gottschalk[12] considered that the primary change occurred in the chorionic villi, a proliferation of the connective tissue taking place, and this, infecting the decidual cells, induced therein a sarcomatous growth. Arguing from such a basis he termed the condition "sarcoma chorion-deciduo-cellulare," and later[13] "sarcoma chorii." Guttenplan[14] and Pestalozza[15] bestowed the term of "infectious hemorrhagic sarcoma;" Jürgens,[16] that of "sarcoma teleangiectodes hæmorrhagicum multiplex uteri et metastaticum colli uteri;" and Löhlein,[17] that of "sarcoma uteri partim deciduo-cellulare post myxoma chorii;" while Schmorl,[18] having faith in the parasitic origin of the disease, termed it "blastoma chorion-deciduo-cellulare."

Marchand,[3] on the other hand, believes that these tumors are of epithelial origin, and, therefore, carcinomatous in nature; and Nové-Josserand and Lacroix[19] are of the opinion that at least in part the growth has its origin from the cells of the uterine muscularis,—a theory absolutely denied by Williams.[2] Reasoning from the same basis Meyer[20] termed the disease "epithelioma papillare corporis uteri;" Klien,[10] "carcinoma of the chorionic villi;" and Klebs,[21] in speaking of Meyer's case, designated it as a "placental papilloma."

There have thus arisen two great points of dispute in the pathology of the disease,—namely, the true nature of the growth, whether it should be classed under the carcinomata or among the sarcomata; and, secondly, its point of origin, whether in fetal or maternal placental tissue. It is now very generally conceded that the tumor is partly sarcous in nature—an impure sarcoma—and, therefore, entitled to classification among the sarcomata. As to its point of genesis the views of the observer are not so unanimous, but the trend of opinion is toward the fetal origin of the disease, the fetal epithelial covering of the placenta,—the so-called syncytium ("a thin stratum of granular multinucleated protoplasm in which no cell-outlines can be distinguished"), probably first becoming involved in the degenerative process. Veit,[22] while admitting the fetal origin of hydatidiform mole, claims that when the malignant deciduoma follows it is very largely dependent upon a primary endometritis that has been of such a degree of severity as to greatly diminish the vitality of the uterine tissues, and thereby pre-

dispose to an extension thereto of the malignant change, they being unable to resist the encroachment of the disease; he even claims that in some cases there may have been a primary sarcomatous change in the endometrium, but in this he is not supported by other competent observers.

Thus far fifty-two authentic cases of the neoplasm[1]—that is, cases in which there can be but little doubt, if any, as to the true nature of the growth—have been recorded in the literature of the world. In addition to these there have been reported five other cases (Hegar,[23] Kaltenbach,[24] and Zweifel,[25] each one, and Veit,[26] two) in which the strong probability points to the decidual origin of the disease, but which cannot be classed among those that have been absolutely demonstrated by post-mortem and microscopic examination. Other still more doubtful cases have been recorded by Klotz,[27] Küstner,[11] Jarotsky and Waldyer,[28] Krieger, [29] and Volkmann.[30] Excluding these ten cases we have upon which to base our statistical study the fifty-two authentic cases which have been recorded in about the following chronologic sequence:

(1) Chiari.[31] Patient, aged 24 years. Number of previous pregnancies not reported. Suffered from repeated hemorrhages and constant sanguineous discharge following a labor at term. Death occurred without operation six months after the birth of the child. The autopsy showed the inner surface of the uterus irregular and granular, with small circumscribed nodules scattered throughout the wall, and metastatic deposits in both broad ligaments.

(2) Chiari.[31] Patient, aged 23 years. Hemorrhage began four weeks after the birth of the third child at term. She shortly developed hemoptysis, and died without operation six months after the labor. The autopsy showed irregular masses in the mucosa of the fundus and upper portion of the corpus uteri, with metastases in the lungs.

(3) Chiari.[31] Patient, aged 42 years. Hemorrhage occurred six days after a premature labor at the sixth month. Hemoptysis was shortly noticed, and the patient died, without operation, six months after the labor. The autopsy revealed an irregular mass in the anterior wall of the uterus, together with small circumscribed nodules throughout the substance of the organ. There were also metastatic deposits in the lungs, ovary, vagina, and pelvic lymphatic glands.

[1] Since this paper was written, there have been reported three additional authentic cases, as follows: C. Monod and L. Chabry (Rev. de Gyn. et de Chir. Abdom.), January and February, 1897. "A Case following Hydatidiform Mole cured by Vaginal Hysterectomie;" Reinicke (Archiv für Gynäk., Band LIII, Heft 1); and Eindfore (Cent. für Gynäk., No. 1, 1897), "A Case following Hydatidiform Mole;" this patient died on the fifth day after a vaginal hysterectomy. This gives a total of fifty cases to date.

(4) Jacubasch.[16] Patient, aged 26 years. Had had previously two normal pregnancies. In January, 1880, she suffered a four months' abortion, and four months later perished from an intraperitoneal hemorrhage, the bleeding being due to the rupture of a bluish-red nodule the size of a hazel-nut, situated on the outer surface of the posterior wall of the uterus. In addition, there were found a tumor of similar character five by six centimetres in size in the fundus uteri, and six other smaller nodules varying in size from that of a pea to that of a walnut. No metastases were noted, and no microscopic examination of the growth was made.

(5) Tibaldi.[32] Patient, aged 31 years. Had had four previous pregnancies. The birth of the fifth child was followed by continuous hemorrhages, resulting shortly in death. The autopsy showed a mass in the uterus presenting characteristic features, with metastatic deposits in the brain, lungs, kidneys, colon, and ovary.

(6) Guttenplan.[14] Patient, aged 28 years. Had had seven previous pregnancies. Three months after the discharge of a hydatidiform mole the patient began to suffer from hemorrhages, which were shortly associated with hemoptysis, and resulted in early death. The autopsy revealed a characteristic growth in the uterus with metastases in the lungs and vagina.

(7) H. Meyer.[20] Patient, aged 55 years. Had had three children, the last ten years previously. Six months after the manual removal of a hydatidiform mole she began to suffer from hemorrhages, and died in three months' time of anemia. The autopsy was incomplete and metastases were not noted. The uterus was considerably enlarged, and its interior presented an irregular, nodular, and worm-eaten appearance. Scattered through its walls were numerous round nodules of a felty appearance, which varied in size from a grain of sand to a lentil.

(8) Sänger.[7 8] Patient, aged 23 years. Aborted in the eighth week with incomplete expulsion of the product of conception, as evidenced by profuse hemorrhage followed by a fetid discharge, lasting for three weeks. To relieve the septic condition the uterus was dilated and curetted. The fever and fetid discharge ceased, but the pulse remained above 100, and convalescence was delayed. There seemed to be an exudation to the left of the uterus, and the uterus itself was increased in size. Later, a distinct tumor appeared in the right iliac fossa, which was supposed to be an abscess. This was incised, and a mass of fungating tissue discovered, but no pus. The iliac bone was found rough and denuded at the bottom of the cavity, and the case was regarded as one of tuberculous periostitis, although no bacilli were found. The patient was cachectic and suffered with dyspnea. She

died seven months after the onset of her symptoms. Autopsy revealed four large, soft, spongy, reddish tumors in the uterine wall, the nodules varying in size from a walnut to a large apple. The uterine mucosa was smooth. Metastases were found in the right iliac fossa, both lungs, diaphragm, and tenth rib. The microscope showed a very hemorrhagic tumor composed of groups of large round cells with large nuclei, resembling those found in the decidua.

(9) Pfeiffer.[33] Patient, aged 35 years. Had had four normal pregnancies and one abortion. In December, 1888, she expelled a hydatidiform mole, after which everything seemed normal. In September, 1889, a profuse hemorrhage occurred, probably an abortion. The hemorrhage then persisted with hemoptysis until her death, on February 4, 1890. The autopsy revealed a characteristic growth in the uterine fundus and left wall, with metastases in the vagina and lungs.

(10) Pestalozza.[15] Patient, aged 25 years. Had had one previous pregnancy. She aborted February 1, 1888, after which hemorrhages persisted until the time of her death, August 1, 1888. The autopsy revealed a characteristic growth in the fundus uteri and anterior wall, with metastases in the vagina, broad ligaments, and lungs.

(11) Pestalozza.[15] Patient, aged 33 years. Had had five normal pregnancies previously. Hemorrhages began a little over a month prior to her death, and the autopsy revealed a characteristic growth in the uterus, especially in the anterior wall and fundus, with metastases in the vagina, broad ligament, and lungs.

(12) Pestalozza.[15] Patient, aged 45 years. Had had previously nine normal pregnancies. On December 26, 1889, she expelled a hydatidiform mole, after which she suffered from irregular hemorrhages until her death, March 30, 1891. The autopsy showed disseminated nodules of new growth in the anterior and posterior walls of the upper uterine segment, with metastases in the lungs.

(13) Pestalozza.[15] Patient, aged 32 years. Had had previously seven normal pregnancies. Hemorrhages occurred after a labor at term, April 17, 1894, and persisted until death, in October, 1894. No autopsy was made. A characteristic growth was noted in the uterus with metastases in the vagina.

(14) Pestalozza.[15] Patient, aged 22 years. Had previously had one pregnancy at term and one abortion. In February, 1894, she expelled a hydatidiform mole, after which hemorrhages occurred at irregular intervals. Vaginal hysterectomy was performed May 14, 1894, the patient recovering and remaining well one year later. There was a characteristic growth in the uterus. No metastases were discovered.

(15) Pestalozza.[15] Patient, aged 44 years. Had had twelve previous pregnancies, all normal except the first, which was ended in a traumatic abortion. On October 4, 1894, the patient expelled a hydatidiform mole, after which hemorrhages persisted. Vaginal hysterectomy was performed October 13, 1894, the patient recovering and remaining well one year later. A characteristic growth was found in the uterus. There were no metastases.

(16) P. Müller.[34] Patient, aged 30 years. Had had six previous pregnancies. In the seventh pregnancy she induced abortion at the fifth month. Some weeks later masses could be felt in the uterus, and hemorrhages occurred. The uterus was then emptied by the curette. A row of cystic tumors shortly appeared in the posterior vaginal wall, and the patient died five months after the abortion. The autopsy revealed a characteristic growth in the uterus and metastases in the vagina and gluteal region.

(17) Gottschalk.[12 13] Patient, aged 42 years. Had had two children and three abortions. After the last abortion, at the third month, profuse and continual hemorrhage occurred; the uterus was dilated several times, and a large amount of what appeared to be placental tissue was removed. Gottschalk then saw the case and removed with his finger from the uterine cavity about 150 cubic centimetres of red tumor-masses. The growth had penetrated the uterine wall, and he feared to remove all lest he perforate the organ. The portions removed consisted of villi that expanded at their ends into roundish masses, some of which were as large as a hazel-nut. The hemorrhages persisting, on August 16, 1892, Gottschalk removed the uterus *per vaginam.* It was very considerably enlarged, and at its upper right-hand margin and involving the fundus and the adjoining anterior and posterior walls, was a large jagged villous growth of a reddish color, which had almost perforated the uterine wall. The woman remained well for six months, but died two months later (March 11, 1893). Autopsy revealed placental-like metastases in the pelvis, lungs, spleen, and right kidney.

(18) Lebensbaum.[35] Patient, aged 27 years. Had had three previous pregnancies. Her fourth labor occurred at term, and hemorrhage occurred five weeks later, lasting eleven days. In spite of curettage the hemorrhages increased, and were associated with rigors. Vaginal hysterectomy was performed July 3, 1891, but the patient died in six days. A characteristic growth was found in the uterus and metastases in the vaginal wall.

(19) Schmorl.[18] The patient's age is not given. Hemorrhage began twelve weeks after a labor at term and persisted until the patient's death, six months later. The characteristic growth was found in the uterus, and metastases in the lungs.

(20) Koettnitz.[36] Patient, aged 25 years. Had had two previous normal pregnancies. After a third normal labor hemorrhages occurred at short intervals, associated with fever, rigors, and delirium. The patient died in ten weeks, and the autopsy revealed a characteristic growth in the uterus with metastases in the vagina and lungs.

(21) Löhlein.[17] Patient, aged 47 years. Had had seven previous pregnancies. In May, 1890, she expelled a hydatidiform mole. There was a cessation of the menses in the summer of 1891; then hemorrhages and a discharge after February, 1892. For two months the patient seemed quite well; then fever and the discharge returned. Vaginal hysterectomy was performed August 8, 1892, the patient recovering and remaining well until January 7, 1893, when she was last seen. The characteristic growth was found in the uterus. There was no metastases.

(22) L. Fraenkel.[37] Patient, aged 25 years. In July, 1892, expelled a hydatidiform mole in the third month of the pregnancy, after which she suffered with parametritis. Twenty months later, in February, 1894, she returned to the clinic in a very poor condition, having a markedly enlarged uterus with tumor-masses on either side of it. She complained bitterly of pain, and passed blood by the bladder. The tumors on either side of the uterus were removed by abdominal section and were found to be small ovarian cystomata. The uterus was stitched to the abdominal incision and opened when it was found to be filled with soft, reddish, placenta-like masses. The patient subsequently suffered severely with cough and headache, and died three months later (June 9, 1894). A partial autopsy was made. A soft, red, spongy tumor was found arising from the abdominal incision. The uterine wall was ulcerated through and its cavity communicated with the parametrial metastases, which in turn communicated with others in the vagina. The bladder and spleen also showed metastases, and the clinical symptoms indicated metastatic formations in the lungs and brain, which organs, however, were not examined.

(23) R. Klien.[10] Patient, aged 27 years. Had had two children, and one abortion, the latter in August, 1892. The menses were suppressed in November, 1892; flooding occurred January 26, 1893, and on March 3 a large vesicular mole was expelled. The flooding and pain continuing, the uterus was curetted on May 15, a left parametritis and salpingitis following. In September the patient became very ill with rigors, fever, and pain. Examination showed enlargement of the uterus. On November 7, 1893, a fatal hemorrhage occurred. Autopsy revealed a characteristic growth in the body and cervix of the uterus with metastases in the vagina, small pelvis, and both lungs.

(24) Paviot.[38] Patient, aged 48 years. Had suffered with uterine

hemorrhages for thirteen years, and had not been pregnant for twenty years. She died finally of anemia, and the autopsy revealed the uterus as large as the fetal head, its left and inferior portion being made up of an adenomatous growth, while its right and superior portion was composed of a dense and somewhat fragile and granular tissue. Metastases were found in the peritoneal cavity, mesenteric and prevertebral glands, lungs, liver, and kidneys; they were reddish in color, slightly granular, sharply defined, and readily enucleated from the surrounding tissues.

(25) Menge.[9] Patient, aged 35 years. Had had eight children and one abortion. On December 28, 1892, she was delivered at the sixth month of a large hydatidiform mole. In May, 1893, six months later, sharp metrorrhagia set in, and on dilating the uterus a hemispheric mass of the size of a bean was detected in the anterior uterine wall. This was removed by the curette in July. On August 3 a fresh hemorrhage occurred, and, after plugging and the use of the curette, some soft masses were removed, which, under the microscope, revealed cells of the decidual type. On August 11 vaginal hysterectomy was performed. Metastatic deposits were found in the vaginal vault, and it was impossible to remove the diseased parts without fouling the peritoneum; hence there was subsequent high temperature and convalescence was protracted to two months. November 21, three and a half months after the operation, small metastatic deposits were detected in the vaginal wall close to the vulvar orifice. They grew very rapidly, sloughing and causing fetor and edema of the labia, and the patient died six months after the operation and thirteen months after the expulsion of the mole.

(26) Hartmann and Toupet.[39] Patient, aged 25 years. Had had a child eighteen months before admission into the hospital. Menstruation occurred during the last six months of lactation; the periods then ceased for three months after a very free hemorrhage. Then for three months there was an almost continuous oozing of blood, terminating in another profuse bleeding which was associated with fever and rigors, and which lasted a fortnight. The uterus was dilated and curetted, but the hemorrhage persisted for a month, at which time the patient died during a severe exacerbation of the flow accompanying the expulsion of a mass resembling placental tissue, eight months after the appearance of the first symptom. The autopsy was incomplete. The left angle of the uterus and its posterior wall were occupied by a blackish mass that resembled placental tissue, and two nodules the size of a hazel-nut were situated in the fundus and posterior wall; they extended through the entire thickness of the uterine wall, were grayish-white in color, soft, and continuous with placental-like masses that

projected from the interior of the uterus. In addition, the uterine wall was studded with many similar but smaller nodules, all of which were developed within veins. No metastases were found in the other abdominal viscera.

(27) Jeannel.[40] Patient, aged 26 years. Had had an abortion in January, 1893, and was then regular until March, 1894, when hemorrhages began and persisted until a vaginal hysterectomy was performed, May 3, 1894. The patient recovered and was well when seen December 20, 1894. A characteristic growth was found in the uterus.

(28) Nové-Josserand and Lacroix.[19] Patient, aged 24 years. Had had two children, the last two and one-half years before. In March, 1892, she expelled a hydatidiform mole, and one month later began to have hemorrhage from the womb, which was then explored digitally. At one point in the anterior wall near the fundus the uterine tissue was very soft, and some fragments removed by the finger-nail revealed, when examined microscopically, a large-celled infiltration of the uterine muscle. Bleeding persisting, a vaginal hysterectomy was performed July 12, 1893, the patient recovering, and remaining well three months later. The uterus was one-third larger than normal; in its posterior wall was a pedunculated, reddish-brown, soft tumor, full of blood, and the size of a nut. Similar growths were found deep in the muscular tissue of the anterior wall. On microscopic examination these tumors were seen to consist of large cells, partly resembling in their arrangement epithelial carcinoma, partly sarcoma. The cells penetrated into the interspaces of the smooth muscular fibres, into the arteries, veins, and lymph-vessels, and developed under the endothelium. No other metastases were found.

(29) Marchand.[3] Patient, aged 34 years. Had had nine children, the last November 26, 1893. Three weeks after the birth of this child uterine hemorrhages occurred, and persisted until a vaginal hysterectomy was performed, on April 20, 1894. The patient made a good recovery, and was well when seen in the following October. A characteristic growth was found in the fundus uteri.

(30) Schauta.[41] Patient, aged 29 years. Had had four previous pregnancies. During her fifth pregnancy she suffered from repeated bleedings, which became free in the seventh month of gestation, and persisted over a fortnight. A hydatidiform mole was then removed, but hemorrhages with a free aqueous discharge persisting, the uterus was exposed six weeks later, and soft masses found projecting into the cavity. The uterine body was soft and enlarged, and there was also a tough, dark-blue swelling on the posterior vaginal wall, the size of a nut. There were two separate pelvic tumors. Microscopic examination of the scrapings proved the growth to be a deciduo-sarcoma and

vaginal hysterectomy was performed on November 21, 1894, the patient recovering and remaining well one and a half years later. The ovaries were found to be considerably enlarged and were also removed, and the vaginal deposit was excised. Not only the endometrium but also the vaginal deposit and the connective tissue of the ovaries contained new growths resembling decidual tissue.

(31) Superno.[42] Patient, aged 32 years. Had had five previous pregnancies, the last child being born ten months before. In the third month of the sixth pregnancy the patient expelled a hydatidiform mole, which was followed by hemorrhage and pain. A vaginal hysterectomy was performed September 14, 1892, the patient recovering and remaining well one year later. A characteristic growth was found in the uterus.

(32) Resinelli.[43] Patient, aged 28 years, who had had three normal labors, the last on March 28, 1890. The fourth pregnancy aborted in the third month during an attack of influenza. Three months later (November, 1891) a small tumor appeared in the vestibule of the vagina, and a pelvic examination revealed an infecting sarcoma of the uterus with metastases in the vagina and abdominal viscera. The patient died March 14, 1892, and the autopsy revealed a characteristic growth in the uterus at the origin of the right tube, with metastases in the lungs, face, vaginal wall, and liver.

(33) Boldt.[44] Patient, aged 33 years, aborted at the fourth month, shortly after which a sanguineous discharge again occurred. Her physician curetted the uterus. Four months later the uterus was greatly enlarged and the patient profoundly anemic. A microscopic examination of the *débris* showed the characteristic decidual cells. A pleurisy with effusion took place shortly, and the patient died a few months later. No autopsy was permitted.

(34) Kuppenheim.[45] Patient, aged 33 years. Had had five previous pregnancies, the last in June, 1894. Hemorrhage occurred three weeks after the birth of the child and persisted until a vaginal hysterectomy was performed, August 20, 1894. The patient recovered and remained well in June, 1895. A characteristic growth was found in the uterus.

(35) Tannen.[46] Patient, aged 23 years. Had had two former pregnancies. The third pregnancy resulted in a hydatidiform mole, which was discharged in July, 1893. The patient was then regular and well until January, 1894, when hemorrhages began and persisted until June 30, when a vaginal hysterectomy was performed. The woman recovered and was well nine months later. A characteristic growth was found in the uterine wall.

(36) Ahlfeld.[47] Patient, aged 17 years, whose menses had been

regular until Christmas, 1893, after which they became more profuse than usual, so that in April, 1894, she was obliged to consult a physician on account of profuse hemorrhages, which had lasted for three weeks. After rest in bed they ceased, and she was well until June, 1894, when she suffered another profuse hemorrhage, which came from a soft, reddish tumor, the size of a walnut, which was situated on the lower portion of the anterior vaginal wall. This was removed and the uterus curetted, the scrapings showing nothing abnormal. The vaginal growth recurred with great rapidity, and soon another appeared beside it. At the same time a tense tumor manifested itself above the symphysis. July 4 she developed the symptoms of peritonitis, and during an abdominal section she died. The autopsy showed the uterus to be perfectly normal, and that the growth arose from the left tube, which had been the seat of a tubal pregnancy. Besides the metastases in the vagina there were numerous small placenta-like thrombi in the lungs, but none in other organs.

(37) Williams.[2] Negress, aged 35 years. Had had five pregnancies, the third ending in a miscarriage at the sixth month. On April 15, 1894, she was delivered of a dead child, and suffered from postpartum hemorrhage and septicemia. Two weeks after delivery a tumor appeared on the right labium majus, and one week later had attained the size of a walnut. It soon became gangrenous and ulcerated on the surface. In another week it was as large as a hen's egg. The patient died July 12, 1894, three months after labor. At the autopsy there was found a smaller mass on the left lateral vaginal wall, and on the posterior wall of the uterus a mass projected into the uterine cavity, while smaller tumors, the size of almonds, were found in the fundus. A similar growth the size of a hazel-nut was found in the hilum of the left ovary, and numerous metastatic deposits in the lungs, spleen, liver, and kidneys.

(38) Bacon.[48] Patient, aged 48 years. Had had six children and two abortions. In December, 1892, in the ninth month of her ninth pregnancy, she expelled a hydatidiform mole. Five weeks later she began to have hemorrhages which recurred frequently; and she died in hospital June 25, 1893, having presented the following series of symptoms: recurrent metrorrhagia, secondary anemia, bilateral pleuropneumonia, endocarditis, septicemia, bed-sores, edema of the legs. The autopsy revealed a characteristic tumor in the uterus with secondary deposits in the right broad ligament and lungs.

(39) Champneys.[40] Patient, aged 18 years. Had had one child in May, 1890. Became pregnant again in September, 1890, and on March 22, 1891, had a profuse discharge of pale-red, clear fluid, containing clots and bladder-like bodies. About four pints escaped. The

discharge continued in smaller quantities until April 8. On April 9 she suffered a profuse hemorrhage and discharged a hydatidiform mole, after which she had septicemia. Was curetted on April 13, and left the hospital on May 22. Hemorrhage returned July 20, accompanied by an offensive discharge and abdominal pains, with fever and rigors. She was anemic and emaciated, and gradually failed until her death, December 12, 1891. Autopsy revealed a sloughing condition of the uterine walls with metastases in the lungs.

(40) Runge.[50] Patient, aged 44 years; a multipara, whose last child was born three years before. She had had profuse hemorrhages for five months, after which she passed a hydatidiform mole. The hemorrhages persisting, abdominal hysterectomy was performed October 28, 1895, the patient recovering and remaining well three months later. A characteristic growth was found in the uterus.

(41) Appelstedt and Aschoff.[51] Patient, aged 33 years. Had had two children. On October 4, 1894, she suffered an abortion at the fourth month, the fetus being macerated. Profuse menstruation occurred in December, 1894, and January, 1895, with a bloody discharge between. A "polypus" was then removed, and the patient discharged in February. She was readmitted in May with a bloody discharge, and a vaginal hysterectomy was performed May 24, 1895, the patient dying, however, June 19. Autopsy showed a characteristic growth in the body of the uterus, extending to within a few millimetres of the peritoneum, with metastases in the lungs, stomach, and pancreas.

(42) Appelstedt and Aschoff.[51] Patient, aged 42 years. Had had two children, one in 1882, and the second in 1886. She expelled an hydatidiform mole, March 28, 1895, and eight days later developed a painful swelling in the left labium majus. On incising this a metastatic hydatidiform mole was found. The patient experienced repeated hemorrhages and died July 25, 1895. Autopsy revealed a characteristic growth in the uterus, with metastases in the paravaginal cellular tissue, left labium, lungs, and spleen.

(43) Lönnberg and Mannheimer.[52] Patient, aged 38 years; a multipara. Was delivered in November by forceps at term. Two months later, metrorrhagia having continued for four weeks, an examination was made and a mass of fibrin discovered. In January the cervix was dilated and a tumor the size of an almond removed from the anterior uterine wall by means of the curette. The bleeding grew worse, and masses of decidual substance were expelled. Emaciation became marked, and the patient died six months after delivery. A characteristic growth was found in the uterus with metastatic deposits in the lungs, liver, spleen, kidneys, and abdominal lymphatics.

(44) Lönnberg and Mannheimer.[52] Patient, aged 42 years. Had

had two children. The third pregnancy ended at the fourth month, on November 19, 1893, a large vesicular mole being expelled. Seven weeks later metrorrhagia set in and continued for nearly two years. The body of the uterus was as large as a fist, and metastatic deposits were found in the vagina. The uterus was removed October 18, 1895, and on October 30 the vaginal metastases were excised. The patient recovered and was in good health April 1, 1896. A characteristic growth was found in the uterus.

(45) Morison.[53] Patient, aged 35 years. Had had nine children. Hemorrhages occurred nine weeks after the last labor, and persisted until a vaginal hysterectomy was performed, December 11, 1894. The patient died July 11, 1895. A characteristic growth was found in the uterus.

(46) Spencer.[54] Patient, aged 27 years. Had had one child seven years before. Three weeks after a normal labor, with a living child, hemorrhage occurred and masses of growth were discharged. The patient died ten weeks after labor, and the autopsy showed a characteristic growth in the body and cervix uteri and metastases in the lung.

(47) Laver and Wilkinson.[55] Patient, aged 21 years. Had had one child three years before. In May, 1892, she became pregnant a second time, but aborted at the end of the third month, and for five months suffered from a constant slight loss. Flooding then occurred at each succeeding menstrual period, and she was admitted to the hospital June 8, 1893, in an anemic condition. August 11 the uterus was curetted, the hemorrhage ceasing for three weeks, and then returning. On October 4 vaginal hysterectomy was performed. The patient became septic, and on November 9 developed fever and rigors, and a dulness over the base of the right lung, which soon extended to the entire back of that lung. Dyspnea was marked, and the patient died December 15, 1893, with all of the signs of recurrence of the disease in the lungs. No autopsy was allowed.

(48) Leopold.[56] Patient, age not given. Was delivered June 25, 1895. Puerperium apparently normal. The menses reappeared three months later, and from that time on she flowed irregularly every two weeks and suffered from severe abdominal pain, which was ultimately followed by collapse. Examination showed the uterus pushed to the right side and enlarged, with a doughy mass behind in Douglas's cul-de-sac. On opening the abdomen, June, 1896, two litres of dark fluid blood escaped. Both tubes were normal, but the anterior wall of the fundus uteri showed from six to eight dark-bluish protuberances, one of which had ruptured and was the source of the bleeding. The uterus was removed. The patient rallied under the use of hypo-

dermoclysis. The uterus was found to contain a soft mass which had grown into and penetrated the muscularis. No microscopic examination was made.

(49) Neumann.[57] Patient, aged 29 years. Had had four previous pregnancies, the first ending in an abortion at the first month, the rest being normal. The fifth pregnancy terminated in the sixth month with the expulsion of a hydatidiform mole. Six weeks later the uterus contained a new growth which had formed metastases in the vagina, and which was accompanied by profuse hemorrhages. One month later the uterus with the diseased adnexa and a portion of the posterior vaginal wall were removed by vaginal celiotomy, the patient recovering and remaining well one and a half years after operation.

(50) Neumann.[57] Patient, aged 51 years. Had had twelve children. In January, 1893, suppression of the menses occurred, and in February the woman commenced to bleed, the hemorrhage being more or less constant from the middle of March until the 12th of April. On May 6 a hydatidiform mole was removed, and the hemorrhage which followed being uncontrollable, the uterus was removed by the abdominal operation. The patient, however, died May 9, of right lobular pneumonia, peritonitis, and left pyothorax. A microscopic examination of the uterine contents showed a beginning malignant degeneration of the chorionic villi. There were probably metastases in the lungs.

(51) K. Aczél.[58] Patient, aged 22 years. Had aborted twice, and nine months before her death gave birth to a child, which died in three months' time. Uncontrollable bleeding from the genitalia followed the confinement, associated with marked pulmonary symptoms, and the patient died in August, 1890. Autopsy revealed a friable tumor in the fundus uteri, and the cervix, vagina, and lungs were the seats of metastases. The latter were hard, circumscribed nodules, showing upon section straight or convoluted structures of cylindric form, yellow in color, and separated from each other by grayish-red tissue. The basement-substance was hyaline in character, with numerous interstitial hemorrhages. The irregularly dispersed cells showed prominently on account of their size and form. In places they were arranged in groups resembling chorionic structure.

(52) Cock.[59] Patient, aged 30 years. Had had three previous pregnancies, and was delivered of her fourth child three weeks prior to her admission to the hospital, the labor being normal and the placenta[6] complete. She rose on the fourteenth day and suffered at once from a slight hemorrhage. On rising two days before her admission she had a profuse hemorrhage. On June 20, 1896, the os was dilated,

and a mass adherent to the posterior wall of the uterus and feeling like placental tissue was removed by the finger and curette. Sepsis developed, and on July 14 there occurred a profuse discharge of blood-stained serum and clots. On the next day the os was found to be patulous, and a rough mass, unassociated with fetor, projected. This grew from the posterior wall and consisted of pale organized tissue. On its removal the uterine wall was found to be very thin. Sepsis again followed, and the antistreptococcic serum was injected, but the patient died July 25. Autopsy revealed a characteristic growth in the posterior wall of the uterus, irregular, pinkish, and granular, with metastases the size of a pea to a small walnut, deep red in color, in the lungs and right ovary. A microscopic examination showed the characteristic features.

From a systematic study of the foregoing cases we are able to arrive at some very interesting and conclusive facts as to the symptomatology and course of this rare and curious neoplasm.

(1) In the first place, as to its *malignancy.* As we have already stated, this growth must be regarded as the most malignant of all forms of malignant tumors. This fact is demonstrated by three characteristic features of the reported cases,—namely, (1) the early and exceedingly rapid development; (2) the great tendency to recurrence and to the formation of metastases; and (3) the high mortality record.

In thirty-one of the cases (59.6 per cent.) the symptoms manifested themselves either at once after labor or within four weeks' time; in five cases (9.6 per cent.) they appeared during the second month after labor; in six cases (11.5 per cent.) during the third month; in five cases (9.6 per cent.) during the fourth month; in one case (1.9 per cent.) not until the seventh month; in one case (1.9 per cent.) the patient had not been pregnant for twenty years, and had had more or less constant bleeding for thirteen years.

Of the fatal cases three (or 7.94 per cent.) died "shortly" after the appearance of the symptoms, the precise time not being stated. In 78.97 per cent. death occurred within six months of the appearance of the symptoms. Thirty-eight of the fifty-two cases died of the primary condition or from a recurrence of the growth, thus giving an absolute mortality for malignant deciduoma of 73 per cent. In one instance only (Williams) did the tumor occur in a colored woman.

Metastases were noted in 70.76 per cent. of the cases. These secondary deposits were found in the following situations in the order of their frequency: Lungs, 78.37 per cent.; vagina, 54 per cent.; spleen, kidneys, and ovary, each 13.51 per cent.; liver, broad ligament, and pelvis, each 10.8 per cent.; brain twice, 5.4 per cent.; and the colon,

right iliac fossa, diaphragm, tenth rib, gluteal region, abdominal wall, bladder, peritoneal cavity, mesenteric glands, prevertebral glands, face, stomach, pancreas, left labium, and abdominal lymphatics, each once, 2.7 per cent.

(2) *The Age of the Patient.*—Necessarily, from the nature of the growth, it appears mainly in early life and during the period of sexual activity. The cases were distributed as follows: In two instances the age is not mentioned; between 15 and 20 years there were two cases (3.84 per cent.); between 20 and 25 years, twelve cases (23.07 per cent.); between 25 and 30 years, eleven cases (21.15 per cent.); between 30 and 35 years, twelve cases (23.07 per cent.); between 35 and 40 years, one case (1.92 per cent.); between 40 and 45 years, seven cases (13.46 per cent.); between 45 and 50 years, three cases (5.76 per cent.); and between 50 and 55 years, two cases (3.84 per cent.). It will thus be seen that thirty-seven cases (or 71.15 per cent.) occurred before the fifth decade.

(3) *The Number of Previous Pregnancies.*—In ten of the cases no mention is made as to the number of gestations that preceded the development of the tumor. Twice (3.84 per cent.) it appeared in primiparæ, in Ahlfeld's case, occurring after an illegitimate tubal pregnancy that had not been recognized prior to the death of the patient. Five times (9.61 per cent.) it followed the second pregnancy; ten times (19.23 per cent.) it succeeded the third gestation; five times (9.61 per cent.) it followed the fourth; six times (11.53 per cent.) the fifth; twice (3.84 per cent.) the sixth; three times (5.76 per cent.) the seventh; once (1.92 per cent.) the eighth; four times (7.69 per cent.) the ninth; twice (3.84 per cent.) the tenth; and twice (3.84 per cent.) the thirteenth pregnancy.

(4) *The Nature of the Pregnancy immediately preceding the Development of the Deciduoma.*—Here we find a very interesting coincidence,—namely, the close association existing between the occurrence of a vesicular mole and the appearance of a malignant deciduoma. In the fifty-two cases reported the nature of the previous gestation was as follows: In one case (Paviot's) the woman had not been pregnant for twenty years, and once (Ahlfeld) the growth followed a tubal gestation in a single girl of 17. Once (1.92 per cent.) it followed a premature labor at the sixth month; twelve times (23.07 per cent.) it occurred after abortions, two of these patients, however, having previously expelled hydatidiform moles, one nine months before, and the other two years before; seventeen times (32.69 per cent.) it followed labor of term, and twenty times (38.46 per cent.) the discharge of a hydatidiform mole. In 42.3 per cent. of the cases (22) the patients presented a history of the expulsion of a vesicular mole at some time prior to the appearance of the disease.

(5) *The Symptoms.*—The clinical manifestations of malignant deciduoma are the early occurrence of profuse and repeated hemorrhages from the uterus; the appearance in the uterine cavity of a characteristic growth, associated at times with a fetid and sanguineous leucorrhea which may contain shreds of tissue; pelvic pain; the development of profound anemia and cachexia with extreme prostration and emaciation; frequently the occurrence of hemoptysis (indicating pulmonary metastasis) with or without pleurisy; grave septic manifestations (elevation of temperature, duskiness of the skin, repeated rigors, and occasionally delirium); and the formation of metastatic deposits in other portions of the body. Edema of the vulva and lower extremities may be noted, and an early fatal termination may be expected unless prompt extirpation of the uterus is resorted to.

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MEMORANDA.

A CASE OF TRIONAL-POISONING.

Last September I was consulted by a lady, aged 35 years, who for some eight years or more has suffered from disease of the genital organs, for which she has been operated upon three times. She had one child, aged 13 years. The perineum was repaired first, then the cervix was restored, and, finally, the ovaries and uterus were removed. Since then she has been a sufferer from nervous prostration, with all the usual symptoms and changes for better and worse.

Previous to the removal of the uterus and appendages she had been given sulphonal frequently in doses of five to fifteen grains with good effect. During her convalescence after operation the latter dose produced, within two or three hours, a peculiar burning and itching sensation, localized to certain areas,—the extensor surfaces of the thighs, the anterior surface of chest and abdomen, the dorsal surfaces of both arms and hands, elbows, and the lips and cheeks.

Being cautioned against the drug, I gave instead trional in doses of fifteen grains and produced the desired sleep, but also a rash and itching in the same spots as before. The former consisted of a simple erythema lasting about twelve hours, associated with slight increase of temperature apparent to the hand of the physician and a severe burning and stinging sensation, and inability to use the hands and fingers in ordinary occupations, caused by the thickening of the skin.

I am told that the insane patients in Blockley show this rash at times so generally as to simulate isolated cases of scarlatina.

W. W. Young, M.D.

Nanticoke, Pa.

A CASE OF TRAUMATIC TETANUS TREATED BY TETANUS ANTITOXIN.

E. S., male, aged 6½ years, residing upon a farm, on January 13, in attempting to prop open a large swinging door of a carriage-house with an ordinary three-tined hay-fork, had his foot pinioned, the door being caught by a gust of wind. One tine entered the right foot upon its inner aspect near the first tarso-metatarsal articulation, emerging

about one and a half inches below the point of entry, making a punctured wound not over five-eighths of an inch deep at its greatest depth. The tines were bright and clean, but inquiry elicited the fact that the boy had found the fork in a yard where the droppings of the cattle were allowed to accumulate for months.

I saw him first six days after the accident. The wound had been treated before my call by various decoctions known only to the laity. I found the wound clean, the skin about it macerated from poulticing, and the puncture healed. Pain, swelling, and tenderness were absent. His preceding night had been sleepless largely owing to stiffness of the neck which had been present for thirty-six hours before my visit. This stiffness was marked, especially upon the left side of the neck, preventing him from turning his head towards the right. There were slight ptosis of the right eyelid, very slight risus sardonicus, and some huskiness of the voice. Deglutition was perfect. His appetite was fair, his tongue coated with a thin white film, the pulse at 4 P.M. 100, and the temperature 102.5° F. Tetanus antitoxin was ordered, but it did not arrive until two days later; in the mean time his condition remained about the same.

A subcutaneous injection of eight cubic centimetres of the antitoxin of the strength of 1 : 1,000,000 was administered, one-hundredth of a grain of physostigmine salicylate every three hours was prescribed, and the wound painted with iodine. On the following day there was less stiffness in the neck, but otherwise the condition was unaltered, the temperature in the afternoon reaching 102.5° F., and the pulse 110. Another injection (eight cubic centimetres) of antitoxin was administered, and from this time the condition rapidly improved, so that on the eleventh day from my first visit, and one week after the last injection of antitoxin, he seemed to be perfectly restored.

Evidently the attack was mild or the length of time elapsing before the diagnosis was made and the antitoxin could be obtained would have been disastrous. The fact that an adult had died from the most violent symptoms of tetanus within one mile of this case, a year previous, may be interesting from an etiologic stand-point.

James Allen Patterson, M.D.

Salem, N. J.

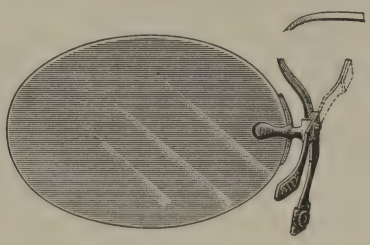
A NEW NOSE-CLAMP FOR REVERSIBLE EYE-GLASSES.

To please some of my younger patients who did not care to wear spectacles, I was induced to experiment and suggest a new form of nose-clamp for reversible eye-glasses.

The accompanying cut is almost self-explanatory. It shows the usual form of nose-piece with a separate swinging arm, which is in-

tended to be placed at a right angle to the plane of the lenses, this extra clamp, or arm, is so arranged that it will rotate upon the post-screw as a pivot.

This extra clamp can be swung *in* each time the eye-glasses are reversed and serves to steady the glasses which are used for monocular individuals requiring a far and a near lens. For weaker or stronger, either plus or minus, this modification is convenient, and is most useful



in cases where it is especially desirable to use a minus cylinder for far and a plus cylinder for near.

Heretofore all reversible eye-glasses have been most troublesome to adjust for both conditions, but for practicability and cosmetic effect this combination makes exact adjustment possible and insures rigidity.

Besides these extra steadying clamps a soft rubber cup-shaped pad is attached to the lowest end of the main clamp.

C. S. Turnbull, M.D.

CLINICAL DEPARTMENT.

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

[Service of Barton Cooke Hirst, M.D. Reported by William Schleif, M.D.

ASPHYXIA CAUSED BY THE PRESSURE OF A LARGE THYMUS GLAND.

Case I.—Female child; born at 5.25 A.M., February 9, 1897. The labor was precipitate, the child appearing a few minutes after the membranes had ruptured. There was a pre-existing tear into the rectum, in consequence of which the head met with no resistance whatever. The labor was otherwise normal, except that there was an unusually large amount of liquor amnii.

The condition of the child seemed fair at birth, though its cry was feeble. A few hours later, when it was given its bath, it seemed perfectly limp and almost lifeless, and it was deeply cyanosed. During the morning and afternoon the baby became pale and cyanosed alternately, apparently having considerable difficulty in breathing. The

respirations were not more than fifty to the minute, but were intermittent in character, a series of little gasps alternating with more vigorous, quiet breathing. Attempts at mouth-to-mouth insufflation met with no success, as the air did not seem to enter the lungs. Temperature 99⅘°F. The skin was warm and dry. Death took place at 4 P.M. of the same day.

The autopsy showed a perfectly normal heart. The thymus gland appeared abnormally large, measuring five centimetres in width, each lobe was three and a half centimetres in height, and the whole gland weighed 10.7 grammes. The lower lobes of both lungs were totally unexpanded, pieces sinking in water. The anterior edges of the upper lobes contained air and floated in water. Abdominal cavity, liver, spleen, and kidneys show nothing abnormal.

A post-mortem diagnosis of asphyxia, caused by an enlarged thymus gland, with almost complete atelectasis of both lungs, was made.

This case is very interesting, because of the rather unusual cause of death and the almost complete atelectasis of both lungs, in spite of which the baby lived for almost twelve hours.

DEATH FROM CEREBRAL HEMORRHAGE.

CASE II.—Female child; born after a normal though rather tedious labor February 28, 1897. During the first two days the baby seemed fairly well; on the third day the temperature rose from normal to 103⅕° F., the respiration to 80 and the pulse to 140. As there was some cough and sneezing treatment for pneumonia was ordered, though no marked physical signs could be demonstrated in the lungs. The temperature continued high, with diurnal remissions of from two to four degrees. On the seventh day the respirations became very irregular; there seemed to be some abdominal tenderness, but no real bowel symptoms. The baby died on the tenth day.

The post mortem showed the left lung to be anemic; the right lung very slightly congested throughout; pieces floated in water. There was a large, red clot over the right hemisphere of the brain posterior to the fissure of Rolando, entirely covering the brain substance. A large, red clot was found in the posterior part of the longitudinal sinus; some hemorrhages existed superficially on the surface of the left hemisphere, while clots were present in the ventricles of both sides. Evidently death was due to cerebral hemorrhage, and it is remarkable to note that the baby lived for ten days, which is very unusual after so extensive a hemorrhage.

DEATH FROM INTUSSUSCEPTION.

CASE III.—Female child, was delivered at midnight February 14, 1897, after a perfectly normal labor. This infant cried lustily at birth,

and seemed in excellent condition, but for a somewhat wrinkled and weazened, old appearance of the face. For a few hours the child seemed well, when there was a sudden rise of temperature from normal to 104⅖° F.; respiration 50, and pulse 180. A mustard bath was followed by a drop in temperature, which, however, soon began to rise. So far there had been no abdominal symptoms. At midnight of the second day there was a discharge of bloody serum with a considerable amount of clotted blood from the bowel; at 2 A.M. the child vomited a brown material. Death took place at 6.20 A.M., February 16, 1897.

The autopsy showed both lungs to be healthy and well expanded. The thymus was small and the heart normal. In the jejunum a well-marked intussusception was found, with areas of hemorrhage extending around the lumen of the gut above this point, where there was some dilatation. Below the intestine was dark red from hemorrhage, fading very gradually into patches and finally pin-point areas of hemorrhage as the gut was examined away from the lesion.

Pathological diagnosis: Intussusception with resulting hemorrhage. This case is unique, as it presents perhaps the earliest case of intussusception on record.

ALUMNI NOTES.

The Commencement Exercises of the University of Pennsylvania.

The one hundred and forty-first commencement of the University of Pennsylvania was held at the American Academy of Music, on Wednesday, June 9, 1897, at 11 o'clock A.M. Degrees were conferred in Arts, Science, Music, Laws, Philosophy, Medicine, Dental Surgery, and Veterinary Medicine,—485 in all. One hundred and forty-seven candidates received the degree of Doctor of Medicine.

Prizes in medicine were awarded as follows:

The alumni medal, with an accompanying purse of $50, to the member of the graduating class who attains the highest general average in examination, to Lawrence Edward Holmes.

The prize of $100, offered by a friend of the department to the member of the graduating class who passes the best examination in obstetrics, to Lawrence Edward Holmes.

The prize of a surgical pocket-case, offered by the Professor of Clinical Surgery for the best report of his clinics, was awarded to Elmer Edson.

Lawrence Holmes and C. W. Wille were each awarded a copy of Treves's "Operative Surgery" by the Professor of Clinical Surgery for their reports of the ward-class work. J. Le Moyne Johnson and John I. McKelway received honorable mention.

The prize offered by the Demonstrator of Osteology to the student passing the best examination in osteology was awarded to George T. Lukens, with honorable mention of S. B. L. Jordan, J. M. Asher, and John L. Atlee.

The prize of an obstetrical forceps, offered by the Professor of Obstetrics to the member of the graduating class who furnishes the best report of a case of obstetrics occurring in the University Maternity Hospital, to Ira A. Shimer.

The prize of $25, offered by a friend of the University to the member of the graduating class who passes the best special examination in therapeutics, to James A. Draper, Jr.

The two prizes offered by the Demonstrator of Surgery were awarded as follows: A surgical pocket-case for proficiency in fracture-dressings in operative surgery, to Raymond Rodgers Farquhar, with honorable mention of David W. Van Camp; a surgical pocket-case to William B. Cadwalader, of the first-year class, for proficiency in bandaging, with honorable mention of Levi L. Riggin.

The Zentmayer prize of a microscope, for the best examination in histology and embryology, to Bernard Kohn, with honorable mention of Victor A. Loeb.

The prize of a case of autopsy instruments, offered by the Demonstrator of Morbid Anatomy, for the best report of the autopsies, to Charles H. Lyon.

The prize of a hemocytometer, offered by the Lecturer on Physical Diagnosis to the member of the first-year class who presents the best report of his lectures on physical diagnosis, to John Kemp, with honorable mention of the report of Astley P. C. Ashhurst.

The prize of an antiseptic minor operating case, offered by the Clinical Professor of Orthopedic Surgery for the best practical work in orthopedic surgery, or the best report of his clinic, or for an acceptable original design in apparatus, to Charles W. McConnell.

The prize of an axis-traction obstetrical forceps, offered by the Barton Cooke Hirst Obstetrical Society to the member of the graduating class who passes the best examination in operative obstetrics, to John I. McKelway.

The Faculty Auxiliary to Medicine conferred certificates as follows: General certificate,— Henry Emerson Wetherill; in Medical Jurisprudence,—Henry Golden, Frederic Griffith, Clinton Joshua Kistler, Emory Marvel, John James Rectenwald, and Ernest Franklin Robinson.

EDITORIAL.

THE LATEST REPORT IN THE ANTITOXIN TREATMENT OF DIPHTHERIA.

The second report of the American Pediatric Society on the antitoxin treatment of diphtheria is particularly interesting, since it deals especially with cases of laryngeal infection, the latter being always grave, and the mortality correspondingly high. Moreover, it is only in these cases that a just comparison can be drawn between the old and new treatment, for the results in thousands of operative cases have been fully recorded both before and since the days of antitoxin. The conclusions deduced having been sanctioned by the association the report may be regarded as the most authoritative expression of opinion which has yet appeared in this country.

By means of sixty thousand circulars distributed throughout the United States and Canada detailed reports, in the form of answers to specific questions, were obtained, dealing with 1704 antitoxin-treated cases, occurring in private practice. Of the whole number treated 360 died, a mortality of 21.12 per cent.

Of 1704 total cases, 1036 were not operated upon (60.79 per cent.). Of these, most did not require operative interference, a few cases were thought to require it, but operation was refused. Among the 1036 cases not operated on, there was a mortality of 17.18 per cent. It was formerly estimated that about 10 per cent. of cases of laryngeal diphtheria recovered without operation. The present report shows that in 1036 cases, 82.82 per cent. recovered.

In the intubated cases, 668 in number, the mortality was 27.24 per cent., the percentage of recoveries being 72.76. This is, indeed, a most favorable showing when compared with the results obtained before the introduction of the antitoxin treatment. In 5546 intubation cases, collected by McNaughton and Madden in 1892, the number of recoveries was only 30.5 per cent.

In 500 cases of laryngeal diphtheria coming under the personal observation of O'Dwyer, before the days of antitoxin treatment, the percentage of recoveries was 27.56 per cent. Of O'Dwyer's next fifty-nine cases, since the introduction of antitoxin, 72.3 per cent. recovered.

In the first report of the American Pediatric Society the per-

centage of recoveries in 553 intubated cases was 74.1 per cent. It will be noted that under the serum treatment the percentage of recoveries about equals the percentage of mortality in preantitoxin days.

Another striking feature of the report is the difference in the number of cases requiring operative interference under the old and new treatment. Before the use of antitoxin it was estimated that about 90 per cent. of laryngeal cases required operation, whereas at present, with the use of antitoxin, only 39.21 per cent. required it.

It is the opinion of the committee that the mortality indicated in the present report is larger than will ever be shown again. Doubtless when the timidity of physicians is overcome and the community realizes the value of the remedy and its freedom from dangerous properties, antitoxin will be administered promptly and in sufficient doses, and then we may expect a far better showing.

The evidence in favor of the serum treatment brought forward in this final report is so overwhelming that it should convince the most stubborn sceptic, and the thanks of the profession are due the committee and the American Pediatric Society for the impartial spirit in which they have conducted the investigation. The following recommendations are offered of the committee:

"Antitoxin should be given at the earliest possible moment in all cases of suspected diphtheria.

"*Quality.*—Of the products on the market some have, by test, been found to contain one-half to one-third the antitoxin units stated on the label. Select the most concentrated strength of an absolutely reliable preparation.

"*Dosage.*—All cases of laryngeal diphtheria, the patient being two years of age or over, should receive as follows:

"First dose,—2000 units at the earliest possible moment.

"Second dose,—2000 units, twelve to eighteen hours after the first dose if there is no improvement in symptoms.

"Third dose,—2000 units, twenty-four hours after the second dose, if there is still no improvement in symptoms.

"Patients under two years of age should receive 1000 to 1500 units, the dose to be repeated as above."

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

Antipneumonic Serum.

Cooke (*British Medical Journal*, May 22, 1897) reports two cases of pneumonia treated with serum. The first case began acutely, and had typical signs of pneumonia. Injections of from seventeen to twenty cubic centimetres of the serum were followed by some subjective improvement. At the second week the case presented symptoms of typhoid fever, and the author considered it a mixed infection of both typhoid and pneumonia. Clumping of the blood-cells was not present, however.

The second case occurred in a young man. Resolution occurred on the eighth day, and there seemed to be no specific symptoms.

Hamelt (*Ibid.*) reports a case in a man of 39 years, a heavy drinker, with complete consolidation of one lung with extremely severe symptoms. Several injections of twenty cubic centimetres of serum were given, each one being followed by some fall of temperature. The case had a normal temperature by the twelfth day. The author evidently views the administration as having done some good.

Appendicitis from a Physician's Point of View.

Goodhart (*Practitioner*, May, 1897) believes that appendicitis is actually more common than formerly. He believes that there is really such a thing as appendicular colic, and quotes cases to prove his point. Points valuable for diagnosis are sudden onset of pain with local tenderness, the pain and tenderness should go together, and the local tenderness is the more important of the two. If one has a sudden onset of pain and tenderness and some resistance in right iliac fossa, or a cordy tumor on deep pressure in the fossa, and the local condition is ushered in by sickness, there is little chance of mistake; there is usually fever, but that is of less consequence. Treatment: Up to a certain point all cases must be treated alike, for in any given case, so long as acute symptoms are present, one must act as if acute peritonitis were imminent. Put patient to bed, milk and water diet, local application of leeches to the abdominal wall over the tender part, or the application of an ice-bag. Judicious use of opium enough to keep patient quiet is necessary, and he uses calomel and opium. Salol or salicylate of sodium are also given. The case will then either mature towards an abscess or gradually subside. If an abscess is imminent the author thinks

the state of the tongue gives the most important test. If it is thickly coated with a whitish fur with reddish edges and the patient is restless and there is no improvement in the local condition, an abscess is probably forming. Time for an operation: Considering the anxiety these cases give us, one's nervous centres naturally itch for a line of treatment that shall put the patient into smooth waters, and no doubt an operation has often been hurried on of late when the time was not ripe, or even, it may be, that it was not even necessary, because of the risk, and because surgery is so competent and confident. So it is well to remember that there is a very definite mortality or risk attaching to the operation, and it is helpful to remember that it is not often that cases require any operation before the fifth day. Cases are, indeed, upon record where very acute necrotic processes have taken place in the appendix in which an operation could hardly have taken place too soon, but one cannot legislate for the exception.

The Ball-Valve Gall-Stone in the Common Duct.

Osler (*Lancet*, May 15, 1897) in a clinical lecture reports the histories of several cases of this condition, and showed a woman suffering from it. He calls attention to one of his previous papers on intermittent fever of hepatic origin as follows: Symptoms: First, jaundice of varying intensity, deepening after each paroxysm, and which may persist for months and even for years; second, ague-like paroxysms characterized by chill, fever, and sweating, after which the jaundice usually becomes more intense; third, at the time of the paroxysms pains in the region of the liver and gastric disturbance. He emphasizes these points, recovery may follow even after the jaundice, chills and fever have lasted for years; the conditions can be differentiated from suppurative cholangitis; the symptoms are probably caused by the ball-valve action of the stone.

He gives the symptoms of gall-stone in the common duct as follows: They are very variable. (1) The occasional or continuous presence of bile in the feces; (2) distinct variation in the intensity of the jaundice; (3) normal size or only slight enlargement of the liver; (4) absence of distention of the gall-bladder; (5) enlargement of the spleen; (6) absence of ascites; (7) presence of febrile disturbance; (8) duration of jaundice for more than a year.

Diagnosis.—The rules given above are those formulated by Naunyn. Osler desires to go further and recognize the special variety of ball-valve stone as detailed in the first part of this abstract. From malaise the condition is recognized by absence of plasmodium in the blood. Abscess of liver is excluded by the absence of tenderness and enlargement, the variable character of the jaundice, the good condition of the patient in the intervals. If suppurative cholangitis is present it is recognized by (1) increased tenderness in the hepatic region, with possibly enlargement of the gall-bladder; (2) the more frequent return of the paroxysms, and often the irregularly remittent form of fever; (3) jaundice less intense in the suppuration, and an absence of the increase of jaundice after a paroxysm; (4) the condition of the patient between the paroxysms is much worse in the suppuration than in the ball-valve condition.

Appendicitis.

Syms (*New York Medical Journal*, May 15, 1897) says, no fixed rule can be laid down for deciding in the early stages between the mild and severe cases. No man is capable of deciding the question correctly in all cases, but to one

properly experienced, an indescribable character of some one symptom may indicate a malignant process. Cases may be classed in three groups: (1) those in which operation is unnecessary and in which expectant treatment should succeed; (2) those in which operation is advisable, but in which delay may do no harm; (3) those in which operation is imperative, and is the only safe method of treatment. The first group is limited to the cases of primary catarrhal appendicitis without suppuration and without gangrene. The second group embraces all cases of recurrent and relapsing appendicitis. The third group embraces all malignant cases. Proper expectant treatment: Put the patinet to bed and keep him there. Apply over the whole right iliac region a soap "poultice," consisting of a thick layer of green soap, spread on a single layer of muslin or lint. Over this apply an ice-bag or ice-coil. Relieve bowels by soap-and-water enema. Keep the stomach at rest while vomiting exists. Restrict the patient to milk or clear broths. Note the temperature, pulse, and respirations every four hours. Give no drugs. *Never* give opium or morphine in cases of appendicitis, except in cases of abdominal shock from rupture of appendix or abscess.

Antitoxin Treatment of Laryngeal Diphtheria in Private Practice.

The *Medical News*, May 15, 1897, contains the report of the American Pediatric Society on the above subject. Seventeen hundred and four cases of laryngeal diphtheria, treated by antitoxin, were reported. There were 360 deaths, a mortality of 21.12 per cent. One thousand and thirty-six cases were not operated upon. Of these there was a mortality of 17.18 per cent., or 82.82 per cent. recovered. It was formerly estimated that about 10 per cent. of laryngeal cases recovered without operation.

In a report by McNaughton and Maddren, in 1892, the mortality of 5546 cases of intubation was 69.5 per cent.; 30.5 per cent. recoveries. In the cases treated with antitoxin and operated upon, the mortality was 27.24 per cent. The report ends thus: (1) the mortality of laryngeal diphtheria at present rests at 21.12 per cent; (2) that 60 per cent. approximately have not required intubation; (3) that the mortality of operated cases is at present 27.24 per cent.

Probable Sign of Tricuspid Stenosis.

Mackenzie (*British Medical Journal*, May 8, 1887) makes a differentiation between a venous pulse of ventricular origin and one due to contraction of the auricles. The pulse found in the liver he claims to have somewhat the same qualities as that found in the veins when due to contraction of the auricle or ventricle. The presence of a liver pulse of auricular type he considers probably diagnostic of stenosis of the tricuspid orifice. He bases the opinions on the study of seven cases, five of which came to autopsy. A great number of cases of liver pulsation due to tricuspid incompetency have been examined, and more have been found to have the auricular character of pulse found in tricuspid stenosis.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

GWILYM G. DAVIS, M.D., M.R.C.S., AND ELLWOOD R. KIRBY, M.D.

Rusting of Instruments in Sterilizing by Boiling.

Edmund Andrews (*Journal of the American Medical Association*, January 2, 1897), as the results of his experiments on sterilizing instruments by moist heat, came to the following conclusions: (1) Hot distilled water and steam rapidly rusts steel instruments; (2) one-per-cent. solutions of soap and sodium carbonate almost perfectly protect steel instruments, provided they are completely immersed in the fluid; (3) if instruments lie in a shallow boiling-pan and are not fully covered with the protective fluid, the portions projecting above the fluid will only get a steam-bath and will rapidly rust. Educated mechanical engineers say that the heat of boiling water somewhat impairs the temper of cutlery steel.

Picric Acid as a Local Application.

Henry Waldo (*British Medical Journal*, February 6, 1897) relates a case of poisoning with picric acid solution applied locally. In one adult patient, for whom he prescribed it, there occurred much prostration and all the symptoms of carboluria with very dark urine. The dermatitis for which it had been prescribed affected the arms and legs, and the drug was ordered to be painted on night and morning. After this had been done for ten days, the above-mentioned unpleasant symptoms developed, which certainly resembled the action of carbolic acid to which it is related.

Gastrostomy.

Charles A. Powers (*New York Medical Journal*, February 6, 1897) describes a case of stricture of the esophagus in which gastrostomy was performed by the Ssabanewjew-Frank method of drawing up the anterior wall of the stomach in the shape of a cone, and passing it through a slit in the abdominal walls to prevent leakage. The stomach was so contracted and thickened that it was difficult to bring up a cone sufficiently long to extend from the first or peritoneal incision to the second or skin incision, which latter was something over an inch above the free border of the costal cartilage. When the operation was finished there was considerable traction both at the junction of the stomach with the parietal peritoneum and at the apex of the cone, where the stomach was opened. Twenty-four hours later the traction of the stomach had dragged down the upper incision so that it lay at the free border of the costal cartilage. The tube passed backward and a little downward into the stomach, thus rendering negative the proposed valve-like closure of the fistula. The drawing up of the cone in operating was by no means so easy as had been expected; it was also much larger and thicker, and while the second incision was laid as far

above the free border of the costal cartilage as is directed by the authors, the traction of the stomach was sufficiently great to draw down the upper incision and tend to place it opposite the peritoneal opening.

Tetanus Antitoxin; Report of a Case.

Cokenower (*Journal of the American Medical Association,* March 27, 1897) reports the following: A man aged 46 had been having stiffness of the neck and difficulty of deglutition for two or three days. A week previously he had let a brick fall on his toe, which, however, only produced a slight abrasion. Later he fell from a roof and sustained a general "shake up," but with no apparent injury. The patient had a pulse of 120 and temperature of 102° F. with spasmodic pains, the body assuming the position of opisthotonos, the head and heels only touching the bed. Sedatives and anodynes were administered. The next day chloroform was given and four cubic centimetres of antitoxin serum were injected subcutaneously. The patient at this time was having seventy-five spasms per hour. Nutritive rectal injections were given. One-fiftieth of a grain of physostigmin and a half of a grain of morphine were also injected hypodermically every three hours. Next day the spasms were not so frequent, and six cubic centimetres of serum were injected and in four hours ten more. After this the jaws and neck seemed to relax. Twenty additional centimetres of serum were again injected in two doses six hours apart. The spasms were then reduced to ten per hour. Two days later the spasms became worse, and as no more serum was obtainable chloroform and antispasmodics were administered; death took place two days after this. The author says that his experience with tetanus serum in this case has been sufficient to convince him that when it is used aseptically, plentifully, and timely, we may expect good results from it, because in this case, even after four days had elapsed from the onset of the disease, the result from its use while being employed and for a limited time afterwards was entirely satisfactory, and so marked that even the friends and relatives noticed the marked improvement.

Partial Resection of the Liver.

Kousnetzoff and Pensky (*Revue de Chirurgie,* December, 1896), from an experimental study or resection of the liver, draw the following conclusions: (1) Ligatures applied to the liver and tied loosely do not sufficiently guarantee against primary and secondary hemorrhage during the first days after the operation. (2) The intraperitoneal method of treatment of the hepatic stump must be considered as the most perfect, particularly if a tampon is used, as recommended by Bergmann and Eiselberg. It is true that in the literature one finds that the extraperitoneal method guarantees against secondary hemorrhage, but we may suppose that the perfected technique of hemostasis will give one the opportunity of successfully practising the intraperitoneal method. (3) The blunt needles used to suture the liver avoids with surety the wounding of the blood-vessel walls and facilitates the technique of the resection. (4) The hemorrhage is to be arrested by tying very tightly, but slowly, the ligature thread which traverses the liver tissue. One thus obtains a complete occlusion of the vessels. (5) The application of ligatures to isolated vessels in the liver tissue is possible. Slipping or rupture of the vessel need not be feared, because the resistance to rupture is considerable. (6) Suturing the epiploon to the resected surface does

not always guarantee against secondary hemorrhage, and, besides, complicates the operative technique. (7) Experiments on the cadaver have demonstrated that the incision parallel to the border of the false ribs gives an easy access to the liver and offers the most advantages.

Actinomycotic Sarcoma of the Inferior Maxilla.

Poncet (*Lyon Médical*, Vol. LXXXII, p. 311) reports a case of large tumor of the lower jaw of actinomycotic origin. He describes it as an actinomycotic sarcoma, or circumscribed actinomycotic neoplasm of the right half of the lower jaw, of nineteen years' standing, in a woman aged 42 years. Infection was probably from the spikes of rye or wheat which the patient had been accustomed to use in picking her teeth. There had been various diagnoses made. The diagnosis of actinomycosis was confirmed by the discovery of the characteristic stellate fungus in the intrabuccal secretions of the tumor which was there ulcerated. The skin was healthy, without any fistula.

The case was afterwards operated on by Jalaguier on account of hemorrhage. The patient did well, but requires another operation. The author concludes that in all affections of the jaws, as well as in all tumors presenting inflammatory characters, one should systematically search for the actinomycotic fungus.

[The word sarcoma is evidently used by the writer to designate a more or less benign tumor of inflammatory origin, such as usually accompanies actinomycosis, instead of the typical embryonic new growth with malignant characteristics to which it is restricted in this country.—Ed.]

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Action of Rontgen Rays on Normal Skin.

Forster (*Deutsche medicinische Wochenschrift*, No. 7, 1897) draws the following conclusions: (1) One to two hours' use of the ordinary tube does not give rise to dermatitis. (2) The same treatment is true of short exposures with the best focus-tubes. (3) A single half-hour exposure gives no bad results; but from repeated exposures there seems to be a cumulative action. (4) In some patients the effect is like that of sunburn, and in addition a falling out of the hair. Should subsequent study reveal the fact that the hair does not reappear, we would have a simple method of depilation.

Thymus Gland in Graves's Disease.

Hector Mackenzie (*American Journal of the Medical Sciences*, February, 1897) reports twenty cases of Graves's disease treated by thymus gland. Of the twenty cases one died, and in six no improvement was observed. In thirteen

cases there was some improvement. In none of these, however, was there such decided effect produced on the most important symptoms as to justify the belief that thymus had any great therapeutic activity. The author concludes that the gland is a remedy of some value, improving the general condition, and in this way may assist towards the recovery of the patient; and that he should at present place it in the same class of remedies as cod-liver oil. The dose to be of any use should be at least one or two drachms a day, of the fresh gland or its equivalent, in the form of extract or powder.

A Case of Bromoform-Poisoning.

Cheyney (*Archives of Pediatrics*, February, 1897) reports the following case: The patient, a girl of 3 years, was given a mixture containing bromoform for pertussis. She was to get two drops in each dose, to be taken every four hours. After taking the mixture regularly for a week without any but good effects, she complained, three hours after the administration of the last dose in the bottle, of feeling dizzy, and speedily fell to the floor powerless. Her head nodded about without control. She was not unconscious and could talk, but her speech was thick and unintelligible. The child acted like one intoxicated. She was very jolly, talked disconnectedly, and laughed without cause. Soon she vomited profusely, and then became unconscious. The face was of good color, the pupil markedly contracted, the respirations were twenty, regular, and not stertorous. The pulse was 105 and regular, but weak; the breath smelled strongly of chloroform. One one-hundred-and-twentieth of a grain of strychnine was given hypodermically. After sleeping soundly for three hours she awoke and was perfectly rational. The writer adds that he has prescribed bromoform frequently in a solution of alcohol, sugar, and water without any bad effects until this time. In the future he will administer the drug dropped on sugar, for in spite of all devices it will precipitate in a mixture.

Treatment of Habit Chorea.

Sinkler (*American Journal of the Medical Sciences*, May, 1897) presents an interesting study of habit chorea based on 143 cases treated at the Philadelphia Infirmary for Nervous Diseases. The majority of cases depend on some distinct and positive cause which must be recognized and removed when possible. In cases of long standing, however, it is not sufficient merely to get rid of the cause, for the nerve-centres do not recover from their vicious habit until systematic treatment has been pursued. This is especially true of cases depending on an error of refraction, and more or less of those cases in which nasal or throat disease has been the primary factor. The point of first importance is to look after the general health. Tonics, especially chalybeates, should be administered, and, if possible, change of air is to be obtained. In school-children it is usually necessary to stop study for a time. Arsenic exerts a special influence on the disease, and to be of value should be administered in gradually ascending doses until some toxic influence is observed. S. Weir Mitchell pointed out many years ago that some cases of habit chorea which were not relieved by internal administration of arsenic were cured by its exhibition hypodermically. Any form of punishment is to be deprecated, but in every case much can be done by the promise of reward. Much benefit will be derived from offering a premium whenever the movements are controlled for a certain length of time. The most speedily beneficial results are obtained by a modified course of rest-treatment.

Surgical Intervention in the Perforative Peritonitis of Typhoid Fever.

Dieulafoy (*Bulletin de l'Académie de Médecine*, No. 42, 1896) draws the following conclusions in reference to operative interference in peritonitis resulting from typhoid fever:

(1) In cases of typhoidal appendicitis and of appendicular typhoidal peritonitis, operative procedures may be employed, if the patient is in a good condition; it gives the best results, provided the interference be made in proper time.

(2) In cases of typhoidal peritonitis from perforation, an operation gives the patient some chance of recovery. The difficulty is in seizing the opportune moment for the intervention.

(3) In spite of the intestinal ulcerations, suturing the intestine brings about cicatrization of the perforation; thus surgical intervention has a practical object in view.

The Absorption of Albumoses in the Rectum.

Kohlenberger (*Münchener medicinische Wochenschrift*, November 24, 1896) publishes the results of his investigation upon the absorption of albumoses from the bowel. An enema amounting to thirty or forty cubic centimetres of a 10-per-cent. solution was employed. The examination of the urine the following twenty-four hours failed to show albumoses with any of the ordinary tests. Water used in washing the bowel four hours after the injection also gave a negative reaction. The author concludes that albumoses are freely absorbed when administered by the bowel, and may be used with advantage in this way in artificial feeding. When so employed, they do not, as when injected into the blood, circulate as foreign substances and pass into the urine unchanged, but are readily assimilated.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

Celiotomy Statistics.

Rein (*Centralblatt für Gynäkologie*, No. 18, 1897), at the meeting on April 25, 1896, of the Kiew Obstetrical and Gynecological Society, reports the celiotomy statistics of his own clinic and those of many other European operators as follows: Of 332 oöphorectomies and removal of cysts of the broad ligament, 3 per cent. died; of 73 fibroid tumors, 10.9 per cent. died; and of 39 other celiotomies for various causes, 38.4 per cent. died. From 1883 to 1888 139

celiotomies, 15.1 per cent. died. From 1888 to 1896, 361 celiotomies 6.4 per cent. died.

Snegirew reports 567 celiotomies with a mortality of 9.3 per cent.; oöphorectomies, 7.4 per cent.; fibroid tumors, 12.3 per cent.; Kossinsky, 412 celiotomies, oöphorectomies, 18 per cent.; fibroid tumors 24 per cent.; Phenomenow, 234, 7.5 per cent.; Ott, 204, 11.4 per cent.; Lebedew, 200, 3.5 per cent.; Bogaewsky, 150, 3.5 per cent.; Lawson Tait, first, 1000, 9.2 per cent.; Lawson Tait, second, 1000, 5.3 per cent.; Leopold, 1000, 13.3 per cent.; Schauta, 1000, 10.4 per cent.; Olshausen, 459, oöphorectomies, 10.1 per cent.; fibroid tumors, 22 per cent.; Leveriono and Codreano, 34 per cent.

A Case of Conception after Curettement in Carcinoma of the Cervix Uteri.

Leinzinoer (*Centralblatt für Gynäkologie*, No. 18, 1897) collects from the literature seven cases where conception has followed operations on the cervix uteri for carcinoma, and reports a case. Cohnstein collected four cases in which, after removal of a carcinomatous cervix, impregnation followed. Gönner observed in a case where the cervix was extirpated for carcinoma a spontaneous birth after three years, in another case after partial extirpation and use of the thermo-cautery conception and abortion in the two following years. Frammel, a case where the cervix was removed in seventh month of pregnancy, the patient going to term, again conceived, and was delivered in seventh month. The writer's patient was 41 years of age, the mother of four children, with a history indicative of carcinoma since May, 1895. On November 26, of the same year, the uterus was found fixed and the parametria infiltrated. Curettement was immediately performed. She first began to bleed again in October, 1896, when, on examination, she was found to be pregnant. Labor was induced within the next month and the fetus and placenta removed. The patient died a few days afterwards. He concludes that it was the good effect of the curettement, the improvement of general health which allowed conception. An interesting factor in the case is that the rapidity of growth of the carcinoma was not increased by the pregnancy. This is proven in that in his experience most cases of inoperable carcinoma of the cervix uteri die within a year, even though curettement is performed.

The Influence of Ether Anesthesia on the Blood and Urine.

Lerber (Dissertation, Bern, *Centralblatt für Gynäkologie*, No. 19, 1897), from a very extensive study of the influence of ether anesthesia on the blood and urine, comes to the following conclusions: (1) That ether anesthesia in men has no destructive influence on the red-corpuscles; (2) that it causes a very marked leucocytosis, the maximum amount of leucocytosis being first found immediately after the anesthetic is well drawn; (3) ether anesthesia may produce albuminuria, yet, even where there are diseased kidneys, ether is preferable to chloroform, since the latter has a comparatively greater deleterious influence on nephritis.

PATHOLOGY.

UNDER THE CHARGE OF
JOHN GUITÉRAS, M.D.,
ASSISTED BY
DAVID RIESMAN, M.D.

The Mechanism of Reaction to Peritoneal Infection.

Durham (*Journal of Pathology and Bacteriology*, March, 1897) has undertaken a study of the factors concerned in the reaction of the peritoneum to infection For the inoculation young agar cultures of various bacteria were employed, the dose being regulated by a standardized loop. Within a variable period peritoneal fluid was withdrawn, and examined in hanging-drop and fixed preparations on cover-slips. At the autopsy on the animal the various membranes and organs involved were also examined.

The various cells concerned in peritoneal inflammation are the following: (*a*) *Hyaline cells;* (*b*) *coarsely granular oxyphil cells,*—the x-granulation cell of Ehrlich, for which the author proposes the not very euphonious term megoxyphil cell or megoxycyte. Contrary to the usual belief, Durham holds that this cell can be phagocytic, though it is much less so than the hyaline and other cells. (*c*) *Finely granular oxyphil cells* (microxyphil cell or microxycyte),— cells containing fine oxyphil granules and a more or less pigmented nucleus. It does not occur in the normal peritoneal fluid of man or the guinea-pig, and probably also not in that of the rabbit. (*d*) *Macrophage.* This appears within twenty hours after an easily recoverable inoculation. Its nucleus is pale, large, and oval or round, and the protoplasm stains with basic dyes.

The cell has an extraordinary capacity for ingesting microxyphil cells. bacteria, etc., and is apparently derived from the endothelial cells of the omentum and the peritoneal covering of the various organs. (*e*) *Basophil cell.* This was not observed in the peritoneal fluid, but was found adherent to the mesentery, omentum, parietal peritoneum, etc.

The changes following peritoneal infection are divided by the author into five stages: (1) Stage before leucopenia; (2) leucopenic stage; (3) microxyphil stage; (4) macrophage stage; (5) recovery to normal.

(1) Among the changes occurring in this stage are the "balling" together of the cells, apparently due to increased stickiness of their surfaces. This increased surface stickiness also facilitates phagocytosis. When the bacteria are extremely virulent, they swim about and hit all forms of cells with perfect impunity, none remaining adherent.

If many non-virulent individuals are present, some become adherent to the hyaline cells, producing at times a "hedgehog" appearance of these cells.

A preliminary attack of the megoxyphil cells, and a subsequent phagocytosis by the hyaline cells, as described by Kanthack and Hardy, was never observed. Microbes adhering to the hyaline cells immediately lose their motility, but contact with the megoxyphil (eosinophil) cells is not harmful to them.

(2) The leucopenic stage is due to the combination of several factors: (1)

Attachment of the cells to the membranes lining the peritoneal cavity, especially the omentum; (2) removal of cells by the lymph-paths; (3) entanglement in clots; (4) actual destruction of cells; (5) in sexually mature female animals removal by the Fallopian tubes. Of these the first is the most important.

Bacteria also become adherent to the omentum, and in cases in which the peritoneal fluid is entirely sterile, cultures from the omentum may show abundant bacterial growth. This is most readily demonstrated after Pfeiffer's reaction. This proves that micro-organisms continue living among multitudes of phagocytic cells upon the omentum and in pseudomembranes, while the peritoneal fluid becomes absolutely sterile. In regard to chemotaxis the author is very sceptical, and considers the phenomena ascribed to it as largely physico-chemical in nature.

(3) and (4) *The Microxyphil and Macrophage Stages or Stages of Leucocytosis.*—The microxyphil cells appear in all cases whether virulent or non-virulent micro-organisms or solutions are used, the number depending on the virulence and quantity introduced. If the infection is highly virulent or toxic, only a few cells appear; if mild, they are found in increasing numbers. In the former case the cells disintegrate rapidly, and phagocytosis is slight.

By acting upon the micro-organisms with bactericidal serum a good deal of phagocytosis may be observed. As to the source of the microxycytes, the author holds that they emigrate from the blood-vessels. Regarding the macrophages, which are actively phagocytic, their origin is probably not hemal, but local.

In all animals that recover from peritoneal infections there is constantly a very considerable microxycyte leucocytosis, followed by the appearance of macrophages. These phenomena appear essential to recovery. As to the nature of the resistance, the author believes that intracellular (phagocytosis) and extracellular processes run hand in hand, and that probably neither alone is sufficient.

Changes in the Micro-Organisms after Inoculaton.—The bacteria assume a coccus-like or spherical condition; the more virulent the infection, the more difficult it is to discern these extracellular degeneration forms. These bodies, which are formed without direct interference on the path of the cells, are ingested by phagocytes.

Conclusions and Summary.—(1) By means of cellular changes which occur after peritoneal infections in guinea-pigs, the following stages may be recognized: (*a*) Preliminary stage; (*b*) leucopenic stage; (*c*) microxyphil stage; (*d*) macrophage stage; (*e*) return to normal.

(2) The peritoneal fluid, membranes, and lymph-paths must be examined in order to obtain complete and accurate notions of the processes.

(3) The nomenclature megoxyphil cells, or megoxycytes, for coarsely granular eosinophil cells, and microxyphil cells, or microxycytes, for finely granular eosinophil cells, is suggested.

(4) The megoxycytes take a minimal share in the processes of bacterial destruction. They may be very scanty during the leucocytic period.

(5) Important changes are to be observed upon the peritoneal membranes; of these the omentum is especially to be noticed.

(6) Pure cellular and pure humoral theories fail to account for many of the phenomena of bacterial destruction in the peritoneal cavity. Both are of importance. A compromise between the two seems the most satisfactory for the explanation of facts.

Alexocyte theories of secretion, etc., are at present not entirely satisfactory, as all the other possible factors have not yet been eliminated or defined.

(7) Extracellular degeneration of microbes can always be detected in normal animals, even in the face of the most virulent and toxic infections. It is especially well seen in actively and passively immunized animals and animals to which temporary resisting power has been given.

(8) The observations of Issaeff on the period of general increased resistance are worthy of careful notice in discussing the theory of immunity. Issaeff's period of resistance promises to be useful clinically as an aid to the surgery of the peritoneum.

(9) The general phenomena of reaction of the peritoneal infection resemble those occurring in the blood after intravascular and in connective tissue after subcutaneous infection.

(10) The general phenomena after peritoneal infection in rabbits and guinea-pigs are not widely dissimilar from those occurring in man.

BOOK NOTICES.

A Practical Treatise on Diseases of the Skin. For the use of Students and Practitioners. By J. Nevins Hyde, A.M., M.D., Professor of Dermatology and Venereal Diseases in Rush Medical College, Chicago, and Frank H. Montgomery, M.D., Lecturer on Dermatology and Venereal Diseases, Rush Medical College, Chicago. New (fourth) edition. Philadelphia and New York: Lea Brothers & Co., 1897.

Dr. Hyde's well-known treatise has so long held an assured place in dermatological literature that an extended and formal review of it must be regarded as supererogatory. In this, the fourth edition, we notice many additions which increase materially the value of the work, and bring it fully abreast of the most recent advances in dermatology. Among the new subjects treated we note Hydrocystoma, Erysipeloid, Conglomerative Pustular Perifolliculitis, Eczema Folliculorum, Protozoan Disease; while many of the older chapters show the addition of more or less new material.

In the section upon the conglomerative pustular perifolliculitis of Leloir the etiology is dismissed with the statement that the disease is probably due to contagion, no mention being made of the fact that some recently published cases make it extremely probable that this affection is due to the trichophyton fungus, is, in fact, a deep trichophytosis, which explains its most frequent occurrence among those whose occupation brings them in contact with horses and other animals. This view of its etiology would alter the therapeutics of the disease very materially.

We note that the authors, following the example of Crocker and Elliot, prefer the title dermatitis seborrhoica to eczema seborrhoicum for the malady first brought prominently before the dermatological world by the writings of Unna.

In the chapter upon lichen, which has been materially revised, attention is briefly called to the subject of "lichenification," one of some importance from a pathological and diagnostic point of view, and one which has recently been discussed at some length, particularly by the French. The recent researches of Sabouraud, which are likely to produce a decided revolution in our notions concerning the fungus of ringworm, are given space commensurate with their importance. While conceding the interest and importance of these recent studies of the ringworm fungus the authors add, "They have added little knowledge of practical value in the treatment of the disease, nor have they yet made sufficient progress to furnish a basis for a new and scientific classification of the different forms of ringworms." The subject of protozoan disease, which at one time not very long ago gave promise of being one of very great importance, not only in dermatology but in general medicine as well, receives consideration in a short section, the extremely interesting cases reported by Rixford and Gilchrist being very briefly referred to. This new edition fully maintains the high standard of excellence reached in the earlier ones, and those who wish to know the latest views upon the subjects connected with cutaneous medicine may confidently consult its pages.

Diseases of the Eye. A Hand-Book of Ophthalmic Practice for Students and Practitioners. By G. E. de Schweinitz, A.M., M.D., Professor of Ophthalmology in the Jefferson Medical College; Professor of Diseases of the Eye in the Philadelphia Polyclinic; Ophthalmic Surgeon to the Philadelphia Hospital, to the Children's Hospital, and to the Methodist Hospital; Ophthalmologist to the Orthopedic Hospital and Infirmary for Nervous Diseases. Second edition, thoroughly revised. Philadelphia: W. B. Saunders, 1896.

Comparison of this, the second edition, with the first shows a decided improvement not only in the mechanical make-up of the volume, but in a thorough revision of the entire subject-matter.

Special paragraphs upon some of the more peculiar forms of localized inflammatory change, monocular diplopia, subconjunctival injections of germicides, infiltration anesthesia, and sterilization of collyria, have been added to advantage. Properly, the bibliography of the first edition has been thrown out and an excellent appendix containing the methods of determining the corneal astigmatism with the ophthalmometer of Javal and Schiötz and the recent good work of Stevens upon rotation of the eyes, as shown by his tropometer, have been substituted, thus giving a wider influence to these most excellent plans of diagnostic technique.

It will be noticed that Dr. Edward Jackson, who is so eminently

competent for such work, has been chosen to revise some of the chapters which Dr. James Wallace so ably contributed to the first volume. Careful study also shows that the chapter on operations has been enlarged and rewritten.

We wish both the author and his publisher a successful sale for the present work with the speedy appearance of increasingly useful newer editions.

PICTORIAL ATLAS OF SKIN-DISEASES AND SYPHILITIC AFFECTIONS, in photo-lithochromes from models of the Saint Louis Hospital, Paris, with explanatory woodcuts and text. By E. BESNIER, A. FOURNIER, TENNESON, HALLOPEAU, DU CASTEL, H. FEULARD, and L. JACQUET, edited and annotated by J. J. PRINGLE. Parts VI, VII, and VIII. London (The Rebman Publishing Company) and Philadelphia (W. B. Saunders), 1896–97.

Part VI of this admirable atlas, representing the wax models in the St. Louis Hospital, Paris, is in every way equal to its predecessors, which have been noted in this Magazine. It contains "Lesions in a Habitual Cocaine and Morphine Consumer," "Ringworm of the Body," "Syphilitic Hyperkeratosis of the Sole of the Foot," and "Psoriasis Figurata of the Trunk."

Part VII shows "Eruption from Bromide of Potassium," "Rupioid Syphilide," "Gangrenous Tubercular Syphilide," and "Hypertrophic Papular Syphilide."

Part VIII contains portraits of the rare diseases "Biskra Button" and "Epithelioma arising from a Lupus Scar," also "Erythema Iris" and "Lichen Planus (Wilson)." The plates are all well executed and handsomely colored, and are faithful reproductions of the models. The atlas may be warmly recommended to all interested in the rapidly growing field of cutaneous medicine.

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AUGUST, 1897.

THE OCULAR EXPRESSIONS OF GOUT.[1]

By Charles A. Oliver, A.M., M.D.,

Philadelphia,

One of the Attending Surgeons to the Wills Eye Hospital; one of the Ophthalmic Surgeons to the Philadelphia Hospital, etc.

When it is remembered that the visual bulb has within its structures a numerous net-work of blood-vessels, and, moreover, when it is understood that the eyeball is nothing more than a lymph-holding end-organ, which is constantly changing the greater part of its fluid constituents, it can be realized that in these structures there can appear all of the irritation and inflammatory changes that may be produced by either an undue amount of urates in the system or the existence of uric acid and other abnormal products in the adjacent parts.

The presence of structural material in the outer coats of the eye that is so similar to that found in any joint tissue, and the close relationship that the bulbus itself in the orbit bears to every ball-and-socket joint, both show how the external coverings of the organ, its encompassing capsules, and its attached muscles with their delicate sheaths, can be seriously disturbed by fluid-change, inflammatory exudate, and inorganic deposit as the results of a gouty diathesis.

The accessories too, so abundant in gland, vessel, lymph-channel, cartilage, and periosteum, furnish an abundant soil for toxic reaction, abnormal secretion, and arthritic change. Nor do the associated nerves escape. Here the evil accompaniments of pressure, invasion, inflammation, and degeneration, all exhibit themselves in many types of the disorder.

[1] Abstract of remarks made in the discussion on gout before the Section on Practice of Medicine at the Forty-Eighth Annual Meeting (Fiftieth Anniversary) of the American Medical Association, held at Philadelphia, June 1–4, 1897.

Take, for example, the lids, the conjunctivæ, the lachrymal apparatus, and the orbital contents. How characteristic are the swollen, tumid, and angry lids, so excruciatingly painful at times, and so seldom if ever ulcerated. The inflammatory condition, so rapid in onset, so barometric in character, and so quickly subsiding by the application of dry heat and the employment of constitutional measures, makes a symptomatic grouping that once seen is seldom, if ever, forgotten. The fleeting forms of conjunctival inflammation with slight or no excretion, the sensation of the presence of foreign body, the dense and not infrequent edema of the submucus tissue, and the intense intolerance to light, must all be noted as expressions of the general disorder, and not entirely the consequences of colonization of localized bacteria. Lithiasis conjunctivæ or calcified infarcta occurring in the course of the Meibomian glands are frequently seen in middle-aged and elderly subjects, and especially in men, as evidences of similar changes to be found elsewhere. At first causing no disturbance, but later by perforation and exposure, producing all manner of irritative lesions by mechanical action, they may produce that most dangerous complication, desquamation of the corneal epithelium, with the usual train of infectious sequelæ. Keratitis, by some stated, peculiarly band-like in character, interstitial at times, and rarely if ever ulcerous in form, has been spoken of by a number of competent authorities.

Inflammation of the sclera both in the fibrous intima and in its overlying capsular and tendinous material, evidences particularly in the male subject, an intimate relation to the general condition by a series of extremely fugitive signs that are in many cases pathognomonic. Circumscribed when superficial, it is not rarely associated with such intense dread of light and such sharp and frequently recurring attacks of lancinating pain, amid copious gushes of hot tears, that the condition of the sufferer becomes truly pitiable. As suddenly disappearing by the local use of heat with pilocarpine at times, and the internal administration of large doses of alkalies, the comfort obtained is ofttimes phenomenal and truly appreciated.

So too with the deeper structures of the eyeball. The iris, with its ciliary and chorioidal prolongations, may suffer intensely. Frequently sharp, excessively painful, devoid of much gross alteration, and at times provoked by accidental and operative traumatism, the anterior segment of the uveal tract becomes a treacherous ground for more deeply seated and more disastrous future outbreaks. More often the inflammation, which may be either plastic or serous in type, especially the latter, is marked and insidious. At times it is hereditary, with vitreous complications. As a rule, it is associated with the general exacerbations and is untypical in form, and although, probably in many cases,

especially in the serous variety, it is coextensive with some more deeply seated inflammatory change, there is very little by which it can be separated etiologically from any other similar form of inflammatory reaction.

The local treatment in both of these types of disorder (always employing heat for the relief of pain) is dependent upon the coexistent condition of the organ, taking care, if any permanent success be hoped for, to resort to active and properly applied systemic measures.

Should the middle or the posterior third of the uveal tract be involved,—that is, should the ciliary body with its contained muscles and the chorioid be inflamed, which unfortunately is not so frequently the case,—the diagnosis becomes less easy, the evil consequences are greater, and the treatment is not so availing. It is probable that in this peculiar type of disorder the existence of most of the forms of lenticular change and some of the varieties of glaucomatic process must be sought for.

Where the retina and the optic nerve are concerned the ophthalmoscopic picture becomes in many cases quite typical. Rapidly recurrent, fine, feathery hemorrhages, with more deeply seated ones located throughout the retina, and atonic broadening and flattening of the retinal veins and arteries, associated at times with some of the signs of incipient glaucoma, often appear early in the history of the case. Later, in the more chronic forms, inflammatory vessel-wall change, with shrinkage, atheroma, and sclerosis, first manifesting itself in the veins and subsequently in the arteries, may be found. The easily recognized edema of the retina with its usual venous accompaniments, generally confined to the posterior pole of the eye, followed by insidious though progressive inflammatory reaction, extending both anteriorly by contiguity into the vitreous and the lens, and posteriorly into the chorioid, are now superadded: these, with the at times peculiar glistening yellowish bodies found aggregated more particularly in the superficial layers of the circummacular region, may be considered as almost pathognomonic. Often low grades of neuritis, which seemingly extend some distance back into the nerve substance, can be recognized, these ordinarily appearing monolaterally and generally found in middle-aged subjects.

As a rule, uncontemporaneously binocular, generally first appearing in the left eye, accompanied by central and paracentral negative scotomatous areas in the visual field, and associated with defective vision, the retinal and optic nerve groupings are not difficult of recognition. Prognosis is never good, and incomplete blindness is almost certain.

From this clinical study will be seen, as before, that the eyeball,

with its accessories, is peculiarly prone to disturbance during the course of the general disease; in fact, the organ in its every detail of structure is liable to changes that are dependent upon gout.

MULTIPLE PARALYSIS FOLLOWING MEASLES.[1]

By Samuel W. Morton, M.D.,

Philadelphia,

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It is my desire, in presenting this paper, to place on record a case which has seemed to me one of unusual occurrence. Before discussing it or presenting the suggestions which have grown out of the study of this case, and the literature bearing upon cases of similar origin, I shall give the history in detail, which is as follows:

Joseph P., aged 2 years and 8 months, was born in Philadelphia, of Irish parents. Father and mother healthy, except that the latter has a tendency to rheumatic neuritis. Grandparents, aunts, and uncles all robust, hearty people. No family history of nervous disease. He has two brothers who are hardy children.

He has always been a healthy child; in fact, was never sick until this attack, which began May 13, 1896. He had been to the park with his parents during the day; was as active as the other children; but in the evening complained of being tired. He was feverish, and during the night sneezed a good deal, and was thought to have caught cold.

May 14, second day of the disease, in the evening, the temperature was 102$\frac{3}{5}$° F.; pulse, 110; respiration, 27. Coryza, lachrymation, and general languor marked. Slight cough present.

Third day: Temperature, 103$\frac{1}{5}$° F.; pulse, 115; respiration, 30. Coryza, lachrymation, and photophobia increased. Conjunctiva quite injected. Tongue slightly coated. Heart, liver, and spleen apparently normal. Lungs normal, with exception of an occasional mucous râle. Tincture of aconite root, spirit of nitrous ether, and neutral mixture were given for the fever. In the evening a macular rash appeared on roof of mouth.

Fourth day: Temperature, 104$\frac{4}{5}$° F.; pulse, 130; respiration, 34. Pronounced rash upon face, neck, and chest, spreading rapidly over the body. Complains of pain on deglutition. Examination showed

[1] Read before the Philadelphia Pediatric Society, May 11, 1897.

signs of acute catarrhal pharyngitis. Coryza and conjunctivitis continue marked.

Fifth day: Temperature, 105° F.; pulse, 136; respiration, 34. Throat and nose continue to show only catarrhal changes. Occasional mucous râles heard throughout the lungs. Had boric acid solution applied to skin, nose, and eyes. Because of irritability of temper did not make effort to make local applications to the pharynx. Cough continues. Heart and other organs continue normal. Dropped spirit of nitrous ether and continued aconite and neutral mixture.

Sixth day: Temperature, 104⅘° F.; pulse, 134; respiration, 36. Dysphagia continues, and is out of proportion to the lesions seen on examination of the pharynx. The rash upon forehead and neck is beginning to fade. Patient quite irritable, crying on the least disturbance. Takes medicine with evident pain on swallowing. Lies where you place him for hours, but cries when the slightest attempt is made to move him, or when he attempts to move any portion of his body. Has not spoken since the fourth day.

Seventh day: Temperature, 103⅗° F.; pulse, 120; respiration, 30. Rash fading everywhere. Dysphagia still evident. Hyperesthesia, muscular soreness, and mental irritability continue. Cries by the hour. Remains in any position you place him until moved. Has not spoken. Bowels moved by repeated small doses of solution of citrate of magnesia; urine passed on sixth day; specific gravity 1018, acid, highly colored; no albumin, no sugar, no casts.

Eighth day: Temperature, 103⅕° F.; pulse, 120; respiration, 28. Rash quite faded from exposed portions of the body. Coryza and conjunctivitis much improved. Pharynx improved in appearance. Hyperesthesia, muscular soreness, aversion to swallowing, and irritability of temper continue. No change in the lungs; other organs continue normal. Has not spoken. Bathing countermanded because of the distress it seems to cause. Bowels moved without aid. Liquid diet as on former days.

Ninth day: Temperature, 103° F.; pulse, 118; respiration, 26. Rash well faded over entire body; otherwise about the same as yesterday. Prolonged effort to get him to speak fails. Parents say he has not spoken to them since the fourth day.

Tenth day: Temperature, 102⅘° F.; pulse, 118; respiration, 26. Lies quiet for hours. Wishes room darkened. Does not care for any one in the room with him. Cries only when disturbed. Takes food with evident displeasure, evidently because of pain on swallowing; for at times acts as if he desires it, yet cries upon the first attempt at deglutition. Has not spoken.

Eleventh day: Temperature, 103⅖° F.; pulse, 124; respiration, 34.

Physical examination negative. Symptoms continue about same as yesterday.

Twelfth day: Temperature, 102° F.; pulse, 120; respiration, 32. Seems a little more comfortable, yet still cries when touched or moved. Rash on forehead beginning to desquamate. Bowels moved; stool formed. Am reminded here to mention that diapers have been used instead of bedpan because of evident distress any such requirement would have caused him.

Thirteenth day: Temperature, 102° F.; pulse, 120; respiration, 32. More comfortable. Begins to be interested in things about him and desires his mother to remain with him. Has continued silent on every subject. Does not cry so much when moved.

Fourteenth day: Temperature, 101 $\frac{1}{5}$° F.; pulse, 116; respiration, 26. Takes food and medicine very slowly and with less evidence of pain. Lies motionless. Has not yet attempted to speak.

Fifteenth day: Temperature, 99 $\frac{4}{5}$° F.; pulse, 110; respiration, 26. Desquamation general and of usual character, otherwise about the same as yesterday. Urine passed yesterday, gives acid reaction; specific gravity 1024; trace of albumin; no sugar and no casts.

Sixteenth day: Temperature, 99° F.; pulse, 108; respiration, 24. Appetite for food, but is very slow in swallowing. Attempts to speak, with an unintelligible whisper as a result. Moves arms and legs slightly. Cannot move his head. Does not cry when touched or moved by his mother.

Eighteenth day: Temperature, 97 ° F.; pulse, 100; respiration, 24. Is apparently very weak. Has not attempted to speak to-day. Has moved his arms and legs less than yesterday. Bowels moved naturally.

Twenty-second day: Temperature, 98 $\frac{2}{5}$° F.; pulse, 92; respiration, 22. Has not grown in strength as one would expect with the return of appetite and other functions. As his mother puts it, "He grows weaker as he grows better." As he lies upon his couch, his head is found upon one side or the other; arms and legs lie where you place them, and when extended the hands and feet droop. Does not cry when handled. Does not speak even in a whisper. Gives his assent by a feeble nod of the head. When placed in a sitting position his head falls upon one or the other shoulder, and the muscles of the trunk are too feeble to hold him erect.

Thirty-first day: Decidedly less power in his muscles generally than he had at last visit. Arms, legs, and neck seem atrophied. No tone in his muscles. Can flex knees but slightly. Grip is feeble and uncertain. Knee-jerk is absent. Muscles of legs and arms do not contract on application of faradic current. Does not seem to have the

usual pain caused by it. Ordered suppository, quinine bisulphate, one grain; extract of nux vomica, one-sixteenth grain, three times a day. To-day, as all through his illness, with the exception of the few hours when his temperature was 105° or upward, his mind is clear. Understands all that is said to him, but can answer only by nod of the head or an indistinct "no" or "yes." Makes a poor attempt at saying "papa."

Forty-seventh day: Has so picked up that he is able, if held under the arms, to walk a little, but is still unable to hold his head up from the shoulder. Extensors of the wrists are still wasted and very weak. When the forearms are extended the hands drop. His grasp upon a cup or other such article is weak and uncertain. When he walks he lifts his feet high in the air and slowly like a child learning to walk, evidently in order to clear the toes of the feet which dip downward slightly. Knee-jerk is still absent. Faradic current causes slight contraction of the flexor, but scarcely a quiver in the extensor muscles of the arms and legs. Muscles in the thighs, trunk, and neck contract more strongly. Cannot turn his head to fix his vision upon an object except with apparent effort and a jerky motion. His speech is still slow and indistinct, and but a few short words have been added to his intelligible vocabulary. Takes his food slowly. Ordered gruels and soft-boiled eggs added to his dietary. Suppositories of quinine and nux vomica continued.

At this juncture I left the city for the summer, hence did not see the patient again for about three months; but on July 10th, or two months after measles began, his mother wrote me that he had improved considerably, but more rapidly in the use of his limbs than in his speech. He was then able to get about with the other children unaided.

September 15, or about four months after his illness began, found him much improved. He had gained his former healthy color and fat, but the legs and arms were not up to their normal condition in size, strength, and firmness of muscle. He was still far from active as compared with his former self. He was unsteady upon his feet, often staggering as he ran. His grip was still weak and not a little uncertain, things often being allowed to drop from his hands. Speech was but little improved. Patellar reflex had returned. All the muscles of the legs and arms react to faradic current. He was still slow in speech and in swallowing his food.

His improvement through the winter has been very gradual, and a few days since, or about one year from beginning of his attack of measles, I found him unsteady in his gait, weak, and tiring easily. Still had difficulty in fixing his vision upon objects requiring the turning of

head. His speech was but slightly improved, as far as distinctness was concerned. Could not speak as clearly as his brother, nearly two years younger than himself.

Dr. William Campbell Posey made an examination of the eyes May 24, 1897, and reported as follows: "Normal accommodative power in both eyes. Irides are of normal size, and respond equally and freely to light, accommodation, and convergence. Eye-grounds normal. Has some farsightedness, and the retinal reflexes are marked."

That he had measles must be admitted, for both his brothers were taken with typical and uncomplicated attacks of this disease between the sixteenth and twentieth days of his illness.

The peculiarities of this case, as they have occurred to me, are as follows: The temperature did not fall nor become normal so quickly as it does in a regular case, when the eruption subsides. He did not speak from the fourth to the twenty-eighth day of his illness, and when his speech returned, it was indistinct and came slowly; in fact, one year after the beginning of the measles it was not so good as it was before he became sick. There was general hyperesthesia and muscular soreness, followed by anesthesia and paralysis, and evident pain on deglutition, followed by slowness in swallowing and slowness and indistinctness of speech. These unusual symptoms occurred in what seemed, otherwise, to be a moderate attack of measles.

The possibility of a mixed infection with diphtheria or scarlet fever occurred to me when the pharyngeal symptoms became pronounced, yet the absence of pseudo-membrane, the time of the occurrence, the slightness of the albuminuria, the time of the occurrence of the paralysis, the amount of hyperesthesia, and muscular soreness are decidedly against the probability of diphtheria. I regret now that I did not take cultures from the throat and nose that this point might have been settled definitely. Since my experience with this case I have resolved to let no case of infectious fever, presenting unusual symptoms, pass by without a bacteriological examination of the throat, nose, and larynx.

To eliminate scarlet fever from this case is a much more difficult task, and the only reasons for its improbable presence are the absence of any difference in the character of the rash from that of an ordinary case of measles; the fact that the desquamation was also normal to this disease, and that there was not the "strawberry tongue" so common in scarlet fever, nor the amount of albumin in the urine, which would be likely to accompany it.

Influenzal contamination is a possibility, but it would very likely have caused a greater or more wide-spread catarrhal involvement, as *e.g.*, pneumonia, enteritis, or nephritis.

Rheumatic neuritis becomes also a plausible possibility, in view of the mother's tendency to that disease. This, again, is improbable, because of the wide-spread character of the neuritis, evidently present, and the fact that the joints and endocardium were not affected.

The most plausible solution of the case is that we had here a wide-spread neuritis, due to a specific poison generated in all cases of measles, acting in this case upon nerves especially disposed to inflammation. Granting this, it is easy to account for the prolonged fever, dysphagia, early absence of speech, hyperesthesia, soreness on motion, anesthesia, loss of reflexes, and wide-spread paralysis.

Leyden, in his brochure upon multiple neuritis, published in 1880, classed such cases as infectious multiple neuritis, and speaks as follows: "The infectious form follows acute infectious disease, such as diphtheria, typhoid fever, small-pox, scarlet fever, and measles; also pneumonia, pleurisy, septicemia, and erysipelas."

Osler[1] thinks they should be classified as "post-febrile polyneuritis," and says that "following typhoid fever, small-pox, measles, and scarlet fever, a neuritis may be limited to the nerves of the legs, producing a paraplegia, or, in some instances, may cause wide-spread loss of power and rapid wasting, so that the cases are very often regarded as acute or subacute myelitis."

H. C. Wood[2] speaks of these cases as "post-febrile polyneuritis," and says, "The neuritis which follows exanthematous diseases most frequently attacks the legs, and is not rarely limited to the nerves of one leg."

Rotch,[3] of Boston, considers paralysis following measles a rare sequel, and says it is usually paraplegic.

Mills and Lloyd[4] express the opinion that multiple neuritis following diphtheria, scarlet fever, measles, and rötheln, the tendency to involvement of the muscles of the eye, palate, pharynx, and larynx, with or without more general paralysis, is well known.

H. Bryan Donkin[5] says "paralytic affections of various kinds seem to me to bear a certain relation to measles. I refer under the heading of nervous disorders to some examples of a special form of muscular atrophy with this connection; and have seen, besides, a few instances of infantile paralysis arising directly out of measles, and with difficulty, or not at all, distinguishable from such as may be sequent on diphtheria. I have notes, among others, of a case of a girl of three, previously quite healthy, who, three days after the onset of measles, lost her speech and all power over the limbs, and had much difficulty in swallowing. After six months she had lost most of these symptoms, but had no control over her legs. Three years subsequent the walk was ataxic and the speech slow and drawling. There was no wasting,

and the knee-jerks and electrical reactions were normal." This case bears marked similarity to my case, and like it goes to show that paralysis may occur quite early in measles.

E. Adinot[6] reports a case of neuritis confined to the right shoulder, arm, and hand, and attended with herpes zoster on dorsal surface of the digits, occurring before measles rash had entirely faded.

O. O. Graf[7] also reports a case of paralysis occurring as early as the acme of the fever, and disappearing during the convalescence of measles.

Bayle[8] is of the opinion that the paralysis which follows measles is more frequent in females and in children, and says that it occurs in the following order and frequency: "Paraplegia, hemiplegia, various cerebral types." He also remarks that the paraplegic type is usually of short duration and easily cured.

P. A. Lap[9] states that paralysis due to measles is not so rare as is frequently supposed. He has reported two cases and notes two forms: cerebral and spinal, and believes the spinal form is not grave, but that in the cerebral form the prognosis should be guarded, since aphasia is very slow to disappear.

I regret to say that, in consulting the numerous text-books upon "practice of medicine" and "children's diseases" and "diagnosis," I have found, under the caption of "measles," but two works giving reference to neuritis as a complication or sequel, and these are Tyson's and Roberts's "Practice of Medicine." Even under the heading "Neuritis" only H. C. Wood, Osler, and Rotch mention it. In the works devoted to nervous diseases one is led to infer that it may occur in measles, only because of the use of the term "exanthematous diseases" as one of the causes.

Herman B. Allyn,[10] of Philadelphia, has reported an interesting case of the cerebral type, and has collected forty other cases. J. S. Carpenter,[11] of Pottsville, Pa., has since added a case of paralysis of upper and lower extremity of right side without aphasia. To these articles I would refer those desiring to make an analysis of paralysis following measles.

From the literature above referred to, the absence of reference in standard text-books and my own case, I make the following deductions:

(1) Paralysis may occur as a complication as well as a sequel of measles.

(2) It is due to the peculiar poison generated in the blood, just as is the paralysis occasioned by diphtheria.

(3) This paralysis may be of cerebral, spinal, or peripheral origin.

(4) It occurs, according to frequency, in the following order: Peripheral (neuritis), cerebral, and spinal.

(5) In all cases of measles, or other acute disease attended by paralysis, a bacteriological examination should be made of the nose, throat, and sputum, for the micro-organisms peculiar to diphtheria and pneumonia.

(6) Mention of paralysis as a complication or sequel to measles should appear in our text-books in which this disease is described.

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OBSTETRICAL COMPLICATIONS, CULMINATING IN THE DEATH OF THE CHILD.

By Homer C. Bloom, M.D.,

Philadelphia,

Out-Door Surgeon to the Gynécean Hospital.

Having had three cases of fetal mortality in succession, I am led to report them briefly.

The first case was that of a primipara, 26 years of age. Labor was delayed seven days, or 287 days from the last menstruation. She had slight irregular pains, continuing for twenty-four hours, when they increased in severity and regularity, the membranes rupturing spontaneously early in the day. Hour after hour passed without the slightest evidence of any dilatation of the os. There was marked rigidity which the pains were slow in relaxing, and everything else that could be done failed to make any perceptible change. This state of affairs continued until twelve o'clock, midnight, on the second day, when it became evident that no forceps operation was practicable at this time, on account of the rigid, undilatable os. The patient began to show that she would not be equal to much more suffering. I at once sent for Dr. Richard Norris, who responded about 1.30 A.M. He

corroborated the position left occipito anterior, that the fetal heart-sounds were strong, that it was impracticable to attempt a forcep's operation at that time, and that we might, if the pains continued strong, be able in an hour or two to apply the forceps. In the mean time we endeavored to strengthen the patient and clean up for what we recognized must be a tedious instrumental delivery. At three o'clock the os was barely dilated sufficiently to lock the forceps, but by the time the patient was under ether, Dr. Norris was able to put on the axis-traction forceps. At 4.15, one hour from the locking of the forceps, the head was delivered (at this moment the fetal heart-sounds were still strong), but external rotation or restitution of the head failed to take place. The enormous overgrowth of the shoulders, out of all proportion to the diameters of the mother, could not rotate. Manipulations of all kinds upon the obstructive point failed, until after fifteen minutes the finger was hooked around the axilla, and the arm brought down, accomplishing quickly the delivery of a still-born child. Every known means failed to resuscitate what was a living child even after the delivery of the head. The child, a male, weighed nearly fifteen pounds, measured eight and two-thirds inches across the shoulders, and twenty-seven inches in length. Dystocia, due to the overgrowth of the fetus, is one of the rarer complications of labor.

The lacerations were very slight, requiring only three stitches. The patient had an uninterrupted convalescence.

The second of these cases is the mother of twelve children, this being the thirteenth pregnancy. She was in the 36th year of her age. Labor was long overdue, being 298 days from the last menstruation. Suddenly one morning, while in the bath-room, she fell fainting to the floor, the fall attracted the nurse's attention at once. The patient was immediately placed in bed and a messenger dispatched for the writer. I saw her twenty-five minutes after the first symptoms.

She was pulseless, blanched, cold, and clammy; respirations shallow; accidental, concealed hemorrhage was only too apparent. Dr. Richard Norris was called and responded. In the mean time full doses of strychnine, digitalis, and ergotine were given hypodermatically. There were no pains, neither could I hear the fetal heart-sounds.

Dr. Norris corroborated the diagnosis, and we both concurred in the advisability of rupturing the membranes, which would leave out the amniotic fluid, and lead to a closer coaptation of the uterus upon the fetal body, and thus tend to stop the hemorrhage. The ergotine was continued, and a tight binder and compresses applied to the abdomen.

In a short time pains commenced, and with the earlier ones there was quite an external hemorrhage; the pains grew stronger, and six

hours from the first symptom the patient was delivered of a still-born child. It was a large boy, weighing twelve pounds. Immediately following the placenta came an enormous tough clot of blood, larger than the placenta itself. On examining the placenta one could easily see the point of separation between it and the walls of the uterus by the dark, clotted condition of the blood, which covered at least two-thirds of its surface. From such extensive separation one is justified in the opinion that the fetus perished the instant such a loss of blood took place. Schultze has pointed out that the death of the child may be due to the failure in the elimination of carbonic acid.

Either view as to the death of the fetus is consistent with the opinion that death was almost simultaneous with the accident.

The mother made a good recovery.

The third patient was 31 years of age, a sexipara. Three children were still-born, one of the others died at five months, having had coryza, and disturbances of nutrition ending in extreme atrophy. The presence of syphilis in this patient was therefore reasonably certain. The one living child, a little girl of 4 years, has enlarged, hard glands, the teeth are poorly developed, and there is a purulent nasal catarrh. This woman was seen forty-eight hours before delivery. She was nervous and apprehensive. She had a rapid, feeble pulse, the pains were slight and irregular, and no fetal heart-sounds could be heard. Strychnine sulphate was given in one-thirtieth grain doses every three hours. Thirty-six hours after the pains became strong, and, following a hard labor of twelve hours, she was delivered of a still-born child, which had undergone post-mortem maceration *in utero;* the placenta was softened and saturated with bloody serum. There was evidence of a septic condition in this patient, from the fact of slight, repeated chills and elevation of temperature two days previous to her delivery, and a severe rigor followed by a temperature of $103\frac{4}{5}^{\circ}$ F. immediately after; the temperature continued high for twenty-four hours, and then suddenly fell to normal after an intrauterine antiseptic douche. Recovery was rapid and without any special incident.

In the first patient the enormous size of the child was sufficient to cause its still-birth; but even with a fetus of normal size the delivery of a living child would have been very difficult, on account of the condition of the maternal soft parts, which were as unyielding as iron, and relaxed only after full anesthesia.

As to the second case, we know but little of the etiology of concealed accidental hemorrhage. In this woman the unusually long pregnancy was no doubt a factor in its causation. It would be interesting to know what relation, if any, the renal and cardiac disease which this woman has bore to the concealed hemorrhage.

As in the first case so in this one, there is no possible way in which the life of the child could have been saved.

The third case I saw for the first time three weeks previous to her labor, and from the history was satisfied of the presence of syphilis, and so informed the patient. At a date so late as this there was no reason to commence antispecific treatment. If this patient had been under systematic treatment throughout the pregnancy, she no doubt would have borne a living child. This woman had never been subjected to antisyphilitic treatment, so that it is reasonable to infer that she was infected at the moment of her first conception.

PUERPERAL TETANUS, WITH A REPORT OF THREE CASES IN THE UNIVERSITY MATERNITY.

(Service of Barton Cooke Hirst, M.D.)

Reported by Frank Bacon Hancock

AND

John Cooke Hirst,

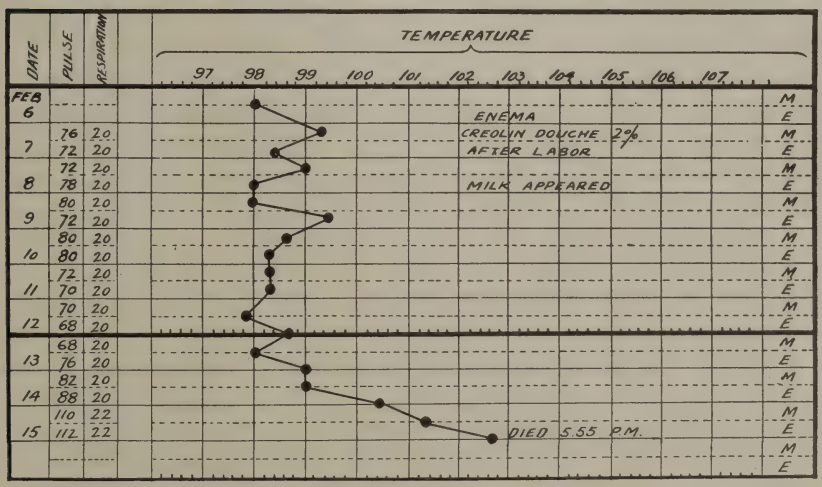
Medical Students in the University of Pennsylvania.

The occurrence of three cases of puerperal tetanus in the Maternity Hospital in rapid succession induced us to look up the literature on the subject, while reporting the cases at the request of Dr. Hirst. We were much surprised at the scanty and infrequent reports of the disease. With the exception of Vinay's excellent paper, published in the *Archives de Tokologie* in 1892, and of Heyse's case, reported by him in the following year, there are only a few isolated reports. Vinay collected a series of 106 cases, including one of his own, comprising all the reported cases up to that time (1892). To this list we have been able to add thirteen cases, including five here reported for the first time, which, as far as can be ascertained, completes the statistics of published cases to the present writing, bringing the total number up to 119. The cases under our observation were as follows:

Case I.—S. S., aged 23 years, colored, was admitted to the hospital, in labor, on February 6, 1896, and was delivered the next day. Her labor was perfectly normal. She convalesced rapidly up to February 12, when she first complained of a stiff neck, for which dry heat was ordered. On the 13th, the condition persisting, salicylates were

given. On the morning of the 14th she refused to take food and medicines, saying she could not swallow, and could not open her jaws. Her head was drawn back, and her jaws were firmly locked. At times she would sit up in bed, foaming at the mouth, and spitting through her clinched teeth. Once during the night she had jumped out of bed, and was found excitedly pacing the floor of her room. On the morning of the 14th she was partially etherized, when it was possible to pry open her jaws about three-fourths of an inch. After regaining consciousness she seemed more comfortable, though her jaws were not relaxed. Towards afternoon she again exhibited restlessness and rigidity of the neck. On the morning of the 15th and during the early afternoon she seemed more comfortable and nursed her baby. For the twenty-four hours preceding she had refused all food except one

CHART I.



cup of tea. At about 5.50 P.M., on the 15th, the nurse took the baby and made the patient comfortable. She was just leaving the room when she heard a scream, and hurrying to the bedside found the patient dying. At no time during the woman's illness did she have general spasm. All the spasms were confined to the jaws, neck, and shoulders. The pain was not severe; at no time requiring morphine for its relief, though she said at times that she was dying. The temperature was typical, remaining normal until just before death, when it reached 102.6° F.

At first this case was treated as one of rheumatism, with salicylates; then a consultation was held, and a diagnosis of hysteria made by a specialist in neurology; electricity by the faradic dry brush being recommended. This was tried with no result beyond throwing the

patient into violent opisthotonos, which left her as soon as the current was removed. No treatment directed to tetanus was attempted, as the true nature of the disease was entirely unsuspected.

Report of Post-Mortem Examination.—Post mortem made four and a half hours after death. Body of a well-nourished, well-developed female; rigor mortis pronounced; nothing abnormal on external examination.

Abdomen.—Peritoneal surface is smooth, normal in lustre; no lymph or pus deposits. Some recent well-formed adhesions around liver and sigmoid flexure. Old adhesions around uterus and Fallopian tubes, especially on right side. Appendix points towards spleen. The *stomach* and *intestines* are normal except for some swelling of the solitary lymph-follicles. Membranes of colon very pale.

Liver.—Somewhat enlarged white patch on the upper surface, probably syphilitic; *bile-ducts* patulous. On section there is cloudy swelling. The liver is slightly fatty and friable. The *spleen* shows slight enlargement, and on section swelling of the trabecula and the lymphoid follicles. The *kidneys* show cloudy swelling. The adrenals are normal. The *uterus* is well contracted, the fundus being about one-half inch above pubis. A few old adhesions present on the posterior wall. Cavity shows disappearance of deciduæ and normal involution. No evidence of sepsis. Right Fallopian tube is congested and shows marked traces of old inflammation with adhesions. Left tube is slightly congested. The *bladder* contains a small amount of urine; beyond a little injection of the mucous membrane is normal. On opening the thorax and incising the pericardium there was found a slight increase in the amount of fluid, with a reddish and turbid appearance. The *pericardium* is clouded on the surface. The *heart* was normal, except for some hypertrophy of the left ventricle. The *lungs* were normal, except for some slight adhesions around the apex of the left one.

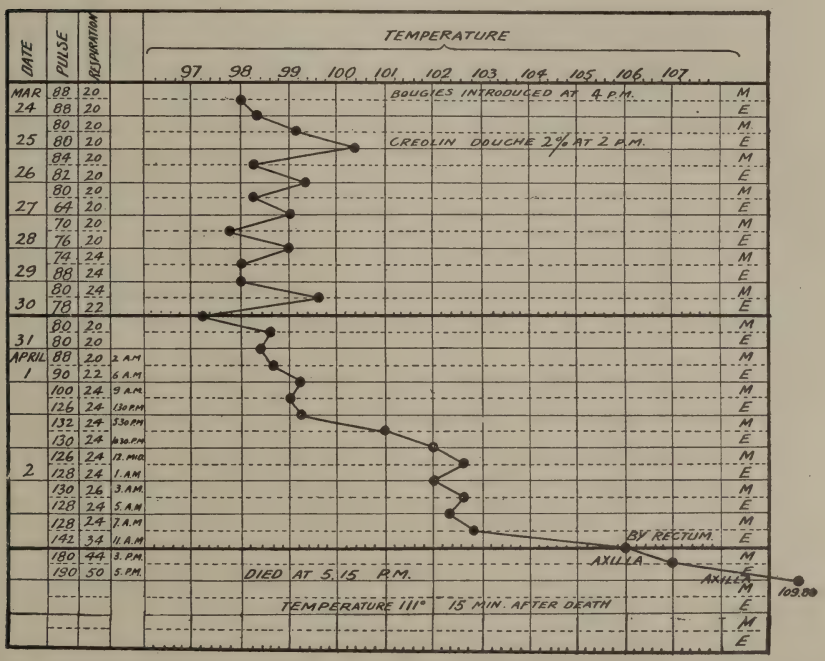
Brain.—External appearance normal. There is an increase of fluid in the ventricles and around the cord. Fluid clear and normal in appearance.

Bacteriological Report.—Inoculations of patient's blood into guinea-pigs produced no effect. Inoculations of the bloody mucus in uterus and cervix into guinea-pigs produced tetanic convulsions, the animal dying in about twenty-four hours. Cultures made from pigs thus treated showed the tetanus bacilli, which were also found by culture-tests to be present in the uterine and cervical secretions.

Case II.—E. B., aged 18 years, white, was admitted to the hospital on March 23, 1896. On March 24 labor was induced by the insertion of bougies, as the patient gave the history of being overdue.

The following day she was delivered by a perfectly easy labor, with no complications. On the morning of April 1, or seven days postpartum, she broke out into violent tetanic convulsions, after almost no prodromal symptoms, and died on the afternoon of the next day, at 5.15. This case was characterized by the remarkable high temperature—the highest, we believe, ever recorded in this disease—and the sudden onset. The temperature rose suddenly from 99.4° to 102° F., and rose steadily until it reached 109.8°, just before death. After death it continued to rise, and finally reached 111°.

CHART II.



The symptoms of this case left no doubt as to its true nature. The patient was immediately put under huge doses of bromides, their depressing effect being counteracted by stimulants,—digitalis hypodermically, whiskey by the bowel, and occasionally hypodermic injections of ammonia. The antitoxin treatment was of course considered, and had, indeed, been tried a short time previously in a case of tetanus, following a perineal operation, under the care of a prominent gynecologist in this city; but both he and the consultant, who saw the case with him, agreed that apparently it materially hastened the woman's death. The only reliable antitoxin in such cases is that prepared by

Cattani, of Genoa, and that was not available at the time. The results obtained from the use of serum therapy have not been as successful as one could wish, most cases showing no improvement, though Maxwell speaks of several cases in which its use was followed by gratifying results. Chloroform was not needed to control the convulsions, as the doses of bromides administered answered every purpose. This case was a typical one of the worst variety of tetanus, terminating fatally within thirty-six hours of the outbreak of the disease.

Autopsy.—Body of a well-formed white woman. No external evidence of disease. The *spinal cord* was first removed. Membranes were of ordinary appearance, and the pia was rather less vascular than usual. There were no macroscopic evidences of disease.

Thorax.—Both *pleuræ* were free from adhesions and deposits of lymph. The *lungs* were extremely soft, light-colored, and emphysematous, but not greatly enlarged. The anterior margins especially were involved. In several places there were small dark spots, having somewhat the appearance of small infarcts or areas of consolidation. The left lung weighed 220 grammes, and the right 230 grammes. The *pericardium* contained about the normal quantity of liquid. The epicardium contained several "milk spots." The *heart* was extremely soft, and on section the muscle was dark red, and of a rather granular appearance. The fibres stood apart more than normal. The heart weighed 225 grammes.

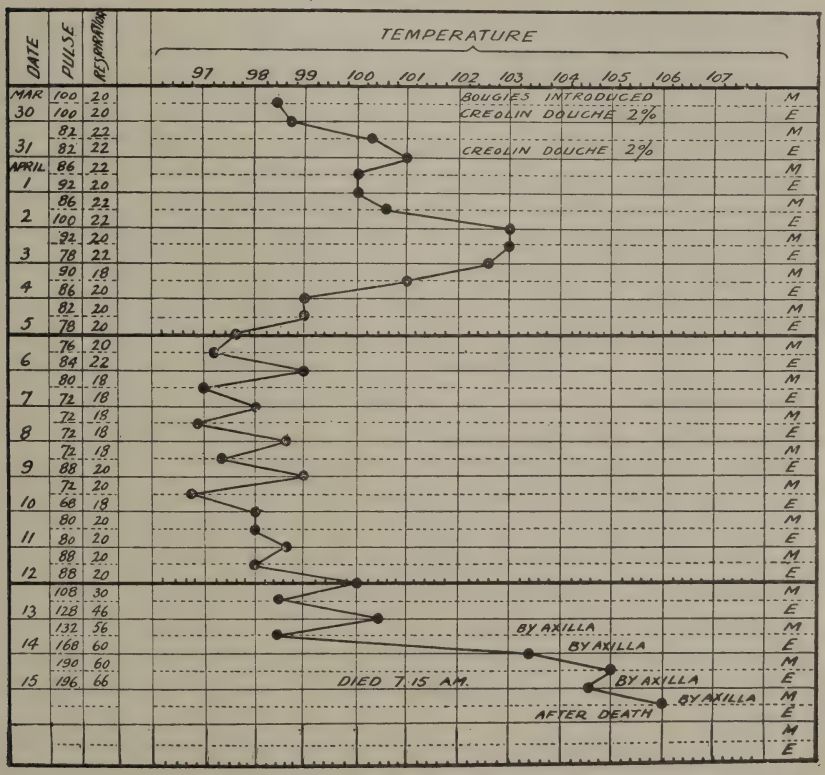
Abdomen.—The superficial examination showed no abnormalities excepting that the much-enlarged *uterus* extended much higher than normal, the fundus reaching almost to the umbilicus. The *liver* weighed 1300 grammes, was extremely soft, and of a light grayish-brown color. In certain areas were found small spots of almost white appearance. The *gall-bladder* was filled with black bile, and the ducts were patulous. The *spleen* weighed 250 grammes, and was soft almost to pulpefaction. In the centre were scattered patches of distinct hemorrhagic infiltration, and in the superficial portions there was decided hyperplasia of the lymphoid elements. The *left kidney* weighed 200 grammes, was soft and of light color; the cortex was wide and almost yellow in hue. The Malpighian bodies were injected. The pyramids were congested. The *right kidney* weighed 170 grammes, and presented the same appearance. The *pancreas* was extremely soft and pulpy. The *adrenals* were normal. The *uterus, ovaries,* and *bladder* were removed together. The *uterus* was about nineteen centimetres long, about ten centimetres wide at its widest part, and five centimetres thick. It was extremely soft. The parauterine veins were all greatly enlarged. The *ovaries* presented no external evidence of disease. On opening the uterus, the endometrium was found to be covered with a

grayish, necrotic deposit of decidual and placental tissues, and the wall of the organ was somewhat infiltrated. Section of the ovaries showed small follicular cysts, and in the left ovary a large corpus luteum.

Bacteriological Report.—The examination of the blood and uterine secretions was, curiously enough, entirely negative. The report of this case was left incomplete bacteriologically, and only the result, as stated, could be ascertained.

Case III.—B. B., aged 20 years, colored, entered the hospital on January 7, 1896. On March 30 labor was induced by the insertion of

Chart III.



bougies, and she was delivered on March 31, at 10.45 P.M., after an easy labor with no complications, she convalesced well until April 2, when her temperature, on account of constipation, rose to 103° F. This promptly yielded to proper treatment, and convalescence progressed rapidly until April 12, or twelve days after delivery, when she complained of a stiff neck. She was immediately put under treatment for tetanus, and the same day the convulsions made their appearance. The same treatment was pursued as in Case II, and apparently with

some degree of success. During the convulsions her opisthotonos was marked, but her jaws, though slightly stiff, were never locked, and the patient was able to talk. On April 14 the disease had apparently yielded to treatment, as her convulsions were much less violent, and hopes were entertained for her recovery. On the evening of the same day, however, her convulsions returned more violently than ever, still characterized by the non-involvement of her jaws, and on the afternoon of the 15th she died, her temperature just before death reaching 104° F., rising later to 106°. Her pulse was 196, and respiration 66. This case ran a slightly longer course than the preceding one, and apparently the infection was not so violent.

Autopsy.—Body of a slight, well-nourished mulatto. The abdominal cavity is normal as to the arrangement of its contents. The *stomach* is distended. The *uterus* extends about two inches above symphysis. There are a few slight adhesions. The *pericardial cavity* contained slightly more than the normal amount of fluid. The *heart* is normal. *Lungs* edematous with considerable anthracosis. *Bronchial glands* are enlarged with caseous and slight calcareous infiltration. The *spleen* normal in size and consistency; on section shows great hyperplasia of the lymphoid elements. The *left kidney* contains a cyst in the substance of the cortex. The capsule strips readily; the cortex is pale, and the pyramids distinct. *Liver* shows increase of connective tissue around the bile-ducts. The *intestinal glands* are slightly infiltrated. On the mucous membrane of the ileum are numerous minute nodules, irregular in outline, and of a grayish color. Ecchymosis around ileo-cecal valve, and also around duodenum. The *bladder* contains a small amount of turbid urine, the vesical mucous membrane pale, but otherwise normal. The length of the uterus is about six inches, and on section the organ was found to contain a good deal of bloody mucus.

The bacteriological report of all three of these cases is, unfortunately, very meagre; the following being all that a most careful search revealed:

The examination of the blood of all three of these patients was entirely negative. Bloody mucus from the uterine cavity of Case I was injected into guinea-pigs. They all died inside of twenty-four hours with typical tetanic convulsions. Cultures made from the pigs, by McFarland's anaërobic method, gave tetanus bacilli. All inoculations from second to third cases proved entirely negative.

Case IV.—Mrs. R., a multipara, aborted as a result of a fall from a car on the 10th of January, 1896. Dr. Egbert, the attending physician, cleared out the membranes, which came away complete. He gave a douche of carbolic acid and sterile water. A few days later he dis-

charged himself from the case, as she was then well. Dr. R. now took charge of his practice, and, on the following Friday, three weeks after the abortion, was called in to see the patient. She had had a slight chill, temperature 102.6° F., and slight stiffness in the back of her neck. Diagnosis, influenza. Gave quinine and Dover's powder. Saturday morning she was found very nervous, with some trismus. Tetanus was thought of, but hardly believed it, as the woman was of a very nervous disposition. For the first time she then told Dr. Egbert of her miscarriage, three weeks previously. Her lochia had ceased, and there was absolutely no discharge. Treatment changed to bromides, thirty grains, three times a day, and in the evening all symptoms were more marked. Bichloride douches were also given morning and evening. On Saturday bromides were continued and eserine sulphate, one-eighty-sixth grain, added. This controlled the spasm, and at 8 P.M. she seemed much better. Spasms were confined to the lumbar region, neck, and jaw. On Sunday at 10 A.M. apparently much improved. On Monday at 9 A.M., while in conversation, her heart, which had been normal, suddenly failed; her pulse became slow and weak. She received hypodermics of digitalis and strychnine, and died ten minutes later. Just previous to this she had been able to swallow. Opisthotonos never pronounced, being merely a retraction of the head. Her temperature was never above 99° F.

CASE V.—Mrs. A., a tertipara, had a very severe fall a few days before term, the impact being over the uterine equator, on an unyielding planking. There was much shock, but no hemorrhage, and no cessation of fetal movements. A few days later she gave birth to a child. The labor was normal except for an adherent placenta, which was removed by the physician in attendance, after sterilizing his hand and arm. Two cotyledons were missing, and, as the uterus had a slight tendency to relax and fill, the physician found and removed the missing particles with his fingers, and then gave a douche of 1 to 2000 bichloride. For thirty-six hours following her condition was good; then her temperature gradually rose, and on the third day dysphagia appeared, which was believed to be of hysterical origin. Later unmistakable trismus developed. The next day there was spinal arching with total inability to swallow. On the fifth day both her heart and respiration failed. Her mind was clear up to within an hour of her death, which occurred on the sixth day. The treatment consisted of chloral and bromides, which seemed to control the spasms.

No definite diagnosis was made at first of the case occurring in the Maternity Hospital, it being treated first as rheumatism and later as hysteria, no suspicion of tetanus being aroused in the minds of the attending physicians. The infectious character of the disease was

made apparent upon the return of the report of the autopsy, made in the William Pepper Laboratory, and a definite diagnosis of tetanus was made, based on experiments upon guinea-pigs, which died inside of twenty-four hours, exhibiting all the symptoms of the disease.

Synchronously with the report of the bacteriologist came the outbreak of the second case, the symptoms of which left no doubt as to its nature. An investigation as to the cause of the infection was then instituted. It was discovered that the head nurse had been in the habit of making the bichloride solutions with distilled water, while the creolin douches, having only slight germicidal properties, were made with water drawn directly from the fauces; the color of the creolin solution disguising the filthy condition of the water. Owing to a misunderstanding, the resident, during his term of service, had been in the habit of administering to all women confined in the Maternity an intrauterine douche of 2 per cent. creolin solution instead of a vaginal one. Every one who has seen the condition of the Schuylkill River during the spring freshets can well appreciate the amount of infectious material this polluted water would carry to an abraded surface. There are only two other possible sources from which this infection could spring. One, the furnaces; which, being worn out, were blowing an unusual quantity of dust into the wards; the other, the bougies used for the induction of labor in Cases II and III, which may have been insufficiently sterilized. As the first woman entered the hospital in labor, there is a possibility that she had been infected previous to her entrance.

As soon as the manner of making the solutions was brought to light, water such as had been used for that purpose was sent to the Pepper Laboratory for bacteriological examination. On allowing it to stand, a sediment one-fourth of an inch in depth was deposited in the glass. Guinea-pigs were inoculated with this, and all, without exception, died inside of twelve hours with the symptoms of malignant edema, the bacilli of which are nearly always found associated with those of tetanus; as the course of malignant edema is much shorter than that of tetanus, the animals were dead before the latter disease had time to develop. The bacteriologist succeeded in making anaërobic cultures of tetanus bacilli from the uterine secretions and bloody mucus from the first woman infected, and also from the guinea-pigs. All douches were stopped as soon as suspicion had fastened upon the water as the infecting medium (Case III), occurring in the last woman who received an intrauterine douche.

At the same time there were reported from other sections of the city four fatal cases of tetanus, two after labor and two following perineal operations. One of these cases occurring after labor is, through the kind permission of Dr. Seneca Egbert, incorporated in this report

as Case IV. Case V occurred in 1892, in the practice of Dr. Horace Williams, also of this city, and is here reported for the first time.

The records of the Board of Health show that the normal death-rate from tetanus is about thirty-five per annum, while for these two months—viz., February and March, 1896—the rate was from three to four times the average.

At this point a few words on the literature, statistics, and antitoxin treatment of puerperal tetanus may not be out of place. Vinay[1] in 1892 published a series of 106 cases, including one of his own. To this list we have been able to append thirteen additional ones: one by Maxwell,[2] one by Irwin,[3] one by Heyse,[4] one by Meinert,[5] one by King,[6] three by Walko,[7] and five of our own, making a total of 119 cases of this rare form of puerperal infection. The record dates back to 1796, in which year the first case was reported by Currie in London. Of the 119 cases included in this record fifty occurred after labor at term, and forty followed abortion. In twenty-nine the origin was not specified. The proportion of tetanus following the various obstetrical operations can be seen from the following table:

Adherent placenta	22	cases.
Tamponnage for hemorrhage	18	"
Forceps	5	"
Version	3	"
Induced abortion	4	"
Craniotomy	1	case.
Cesarean section	1	"
Induced labor	2	cases.

The period of incubation of tetanus is an extremely variable one, ranging from one to twenty-one days, some writers (*vide* Maxwell[2]) claiming as late as thirty days. The period of incubation of all the cases contained in this record, of which definite data could be obtained, is as follows:

TABLE SHOWING PERIOD OF INCUBATION OF PUERPERAL TETANUS.

After Abortion.	Cases.	Days.	Cases.	After Labor at Term.
Seventeen cases in first week.	0	1	1	Twenty cases in first week.
	1	2	1	
	3	3	2	
	1	4	2	
	2	5	6	
	3	6	2	
	7	7	6	
Twenty cases in second week.	5	8	3	Twenty-seven cases in second week.
	2	9	7	
	5	10	6	
	1	11	5	
	1	12	2	
	3	13	2	
	3	14	2	
Three cases in third week.	2	15	2	Three cases in third week.
	0	16	1	
	1	21	0	

The mortality of puerperal tetanus is practically the same as that of surgical tetanus, the former being 89.1 per cent., while the latter is 89.7 per cent.

The most carefully and scientifically reported case of which we have record is that of Heyse,[4] who found that the dried cervical secretions, taken on sterile cotton during the life of the patient, killed by tetanus the guinea-pigs inoculated with it, while the bacteriological examination of the secretions from vaginal ulcers and the uterine mucosa gave negative results. These dried secretions preserved their virulence after three months. Bacteriological examinations gave cultures of tetanus bacilli, staphylococci, and a peculiar, long, thick bacillus. A pure culture of tetanus bacilli was obtained from this mixed culture. Heyse, in common with Vaillard and Rouget, claims that tetanus is always a mixed infection, and that these bacilli can only develop in a medium prepared for them by other germs. In Heyse's case the staphylococcus cereus albus caused diphtheroid degeneration of the uterine mucous membrane, and thus favored the development of the tetanus bacilli. One of the cases under our observation seemed to support this theory, there being found on post-mortem examination a grayish, necrotic deposit on the placental site (Case II). The other two, however, failed, after the most careful examination, to show any sign of mixed infection, as did that reported by Maxwell.

In Maxwell's[2] case the patient was delivered by her husband, who was a laboring man, and death in her case was due to exhaustion.

Irwin[3] reports the only recovery reported since Vinay's record in 1892, the patient, a girl of 17 years, being discharged cured after six weeks.

Walko[7] reports three cases occurring in Prague; one in Professor von Jaksch's clinic, and the other two occurring in the Hebammen clinic. The case occurring under von Jaksch is the only one of the series reported in detail. On the two cases in the Hebammen clinic total hysterectomy was performed as soon as the first symptoms appeared, presumably to remove the infected area, and were afterwards treated by Cattani's and Tizzoni's antitoxin, as was also the first one. The nature of the antitoxin is thus described by Walko: "The tetanus antitoxin of Professor Cattani and Tizzoni, prepared from the blood serum of immunized dogs and rabbits, is an amorphous, dried substance, like the white of an egg. It gives with water an opalescent emulsion, which is injected by means of a Koch syringe." The case occurring in von Jaksch's clinic was treated with antitoxin, administered as follows: Each injection consisted of antitoxin 0.2 gramme, water 5 cubic centimetres. The injections were given at approximately five-hour intervals. The patient received in all eighteen injections, or 3.6 grammes, of antitoxin, the only effect of which was to produce a marked leucocytosis.

Walko reports a series of sixteen cases of puerperal tetanus treated by antitoxin, in which the injections were begun from one to twenty-four days after the appearance of the first symptoms. Of these cases two were cured after one month, and fourteen were temporarily improved. Albertoni[8] reports that of 176 observed cases of tetanus, variety not stated, 136, or 78.9 per cent., were cured by the use of the antitoxin treatment.

On the other hand, Marcosignori[9] and Rötter,[10] three cases; Escherich,[11] three cases; Bauer,[12] Schwarz,[13] and Foges[14] report cases in which the antitoxin was absolutely valueless. To these can be added the three reported by Walko, and one of which we have knowledge, occurring in the practice of one of our most eminent gynecologists in this city. In this case the antitoxin, not, however, that of Cattani, materially hastened the woman's death. A more detailed account of the antitoxin treatment is given by Walko,[7] while the bacteriology of tetanus has been very thoroughly worked out by Dr. Scott.[15]

In conclusion, we desire to express our thanks to Professor Barton Cooke Hirst, of the University of Pennsylvania, to whom we are under great obligations for permission to publish these cases, and for much valuable advice; and we also desire to thank Drs. Egbert and Williams for their interest and assistance.

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THE INFLUENCE OF DISEASES OF THE NARES AND PHARYNX ON AURAL AFFECTIONS: A STUDY OF SIX HUNDRED CASES OF MIDDLE-EAR DISEASE.

By Lewis S. Somers, M.D.,

Philadelphia.

"As is well known, the diseases of the naso-pharynx and of the nasal cavity are not only frequently the forerunners of affections of the middle ear, but also exert an important influence upon the course and results of these affections." Similar expressions as this, so ably expressed by Politzer, are found scattered all through the literature relating to aural affections; but are rarely given the importance they deserve, and still less are they put into practice. The repeated history given by patients suffering from aural disease, of nasal or pharyngeal affections, preceding or being intercurrent with the loss of hearing, suppurating otitis, or whatever aural symptom existed, led me to make a detailed study of 600 consecutive cases of affections of the middle ear; with results that fully demonstrate the great importance of lesions, either acute or chronic, of the nose or pharynx, and especially that portion of the respiratory tract, the naso-pharynx, as etiological factors in the production of middle-ear disease.

Suppurating otitis can be successfully treated; but the great function of the physician is prophylaxis, and in the large proportion of cases the history shows that proper attention to the upper respiratory passages would have prevented the aural affection. Not only is suppurating otitis a consequence of inflammation of the nose and pharynx, but even more frequently will we find an antecedent history of post-nasal catarrh, especially in sclerosis of the middle ear, the opprobrium of all aurists.

The anatomical relations existing between the middle ear and the naso-pharynx explain why diseases of the ear are so common, following abnormalities of the naso-pharynx. The mucous membrane of the middle ear is continuous with that of the nose and pharynx, modified only by its location and function, the connection being made by the Eustachian tube. From purely anatomical grounds inflammation, either acute or chronic, unless promptly and properly checked, must spread through the tube and involve the middle ear in a large number of cases.

The cases here reported were seen in the Union Mission Hospital and in my office; of the 600 cases of aural disease examined, 325 were females and 275 males. The youngest patient was four months old, while the eldest was 78 years. The aural symptoms complained of are shown in the following table:

TABLE NO. I.

EAR.

Deafness occurred	. . . . .	310 times.
Otorrhea	"	210 "
Tinnitus	"	159 "
Otalgia	"	125 "
Vertigo	"	15 "

As several of the symptoms were often present in the same case, the number of times a given symptom occurred is used in preference to the number of cases, as the morbid process present in the middle ear will be seen in a following table.

The chronic form of naso-pharyngeal disease, although productive of suppurative otitis, seems in the larger proportion of cases to even exercise a greater causative influence in aural sclerosis. The condition of the tympanic membrane, on examination, shows that dry or sclerotic diseases of the middle ear preponderated. Eliminating cases in which the drum was perforated or acute myringitis was present, we have 297 cases, or nearly 50 per cent. of cases of this condition.

TABLE NO. II.

MEMBRANA TYMPANI.

Thickened and usually retracted	273	cases.
Perforated or absent	210	"
Acutely inflamed	85	"
Atrophied	17	"
Part calcified	7	"
Normal	8	"

The cases presenting nasal and pharyngeal diseases are shown in the following:

TABLE NO. III.

Nose affected only	143	cases.
Pharynx affected only	42	"
Both pharynx and nose affected	200	"
History of extension of nasal or pharyngeal disease to ear, but not presenting lesions on examination	125	"
Nose and pharynx normal	90	"

Two points are very forcibly shown,—first the very small proportion of cases presenting chronic pharyngeal lesions only, but 7 per cent., and, secondly, the comparatively large number showing both pharyngeal and nasal disease in the same case, 200 cases, or 33 per cent. The total number of aural cases with subjective and objective symptoms of either nose or pharynx, or both, were 385, or 64 per cent. Adding to this 125 cases with previous local naso-pharyngeal disease, such as coryza, or general affections, such as measles or scarlet fever with involvement of the pharynx or nares, and we have a total of 510 cases, or 85 per cent., of aural disease associated with affections of the upper respiratory tract.

The local conditions present in the nose and pharynx were as follows:

TABLE NO. IV.

NOSE.

Turbinals hypertrophied	205
Atrophy	36
Exostoses	29
Septum deviated	26
Sclerosis	19

PHARYNX.

Hypertrophic, including (*a*) acute inflammation, (*b*) enlarged tonsils, (*c*) adenoid tissue, (*d*) hyperplasias of naso-pharynx	238
Atrophy	61
Granular or sclerotic	20

It may be deduced from this table that the most frequent cause of middle-ear disease is hypertrophy or any long-continued hyperplastic condition of the naso-pharynx and nose. In this series of cases hypertrophy of the turbinals was present in 205 cases, or 34 per cent., while deviated septum was seen in but twenty-six cases, or little over 4 per cent. Including all forms of nasal obstruction the cases here presented gave 38 per cent.

Sixteen per cent. of the cases presented atrophic changes in the nose or pharynx. Pharyngeal atrophy especially influences aural disease by bacterial infection. The constant effort on the part of the patient to remove the inspissated mucus from the posterior wall and vault of the pharynx acts in two ways: by irritating the mucous membrane of the pharynx, thereby setting up additional inflammatory changes, and by continually inflating the already too patulous Eustachian tube, constantly producing marked changes in the intratympanic air-pressure, and also forces bacteria or bacteria containing mucus into the middle ear. The effect of adenoid tissue in the vault of the pharynx needs no special mention, as its action in the production of deafness is too well known. Nearly all the cases with inner-ear disease gave a history of atrophic rhinitis.

It must be remembered that there is such a thing as meddlesome nasal surgery, a somewhat potent factor in the production of suppurative aural lesions. Especially has suppurative otitis been caused by the removal of postnasal hypertrophies, and of the nasal cavities proper, the nasal douche still must be considered as a factor in the etiology of aural suppuration.

Whether such constitutional diseases as la grippe, pertussis, or pneumonia produce aural disease by direct extension of inflammation from the pharynx or, on the other hand, the aural disease is the result of a general systemic toxin especially affecting the organ of hearing is difficult to decide in all cases. That the middle ear may become affected in these processes by direct inflammatory extension *via* the Eustachian tube seems probable.

The following table shows 125 cases of aural disease in which there were no chronic naso-pharyngeal lesions, but at the time of ex-

amination presented acute inflammations of this locality or either gave a history of such extending to the auditory apparatus:

TABLE NO. V.

Coryza	51	cases.
Measles	24	"
Scarlet fever	22	"
La grippe	15	"
Dentition	6	"
Pertussis	5	"
Pneumonia	1	case.
Diphtheria	1	"

Dentition has been added to this list as it was the cause of suppurative otitis in the six cases mentioned. In four cases the aural trouble was due to direct extension of the gingivitis. In two this could not be proven, but as the inflammation of the buccal mucous membrane was coincident with the aural suppuration, evidence was in favor of such being the case, although reflex action probably played an important part.

The ninety aural cases not presenting naso-pharyngeal disease were due to a variety of causes, such as traumatism, swimming, and in the large proportion no assignable cause could be discovered. In this class five cases with normal nose and pharynx gave typhoid fever as the cause, rheumatism two, varicella one, and syphilis two.

Acute rhinitis produces inflammatory changes in the middle ear in two ways, in most cases the inflammation extends from the Schneiderian mucous membrane through the Eustachian tube. Another method is by the constant congestions produced in both ear and nose by frequent attacks of coryza. Chronic otitis media, the result of frequent exposure to cold, is produced by the constant naso-pharyngeal congestion, from which the vessels within the tympanum become engorged with blood, finally producing tissue-changes, with more or less involvement of the ossicles.

Conclusions.—(1) Sclerosis of the middle ear is usually the result of previous nasal or pharyngeal disease.

(2) Otitis media suppurativa is a common and frequent result of acute or chronic naso-pharyngeal disease.

(3) Fully 75 per cent. of all forms of middle-ear disease will show on examination or give a history of naso-pharyngeal disease.

(4) Sixty-four per cent. of tympanic affections are coincident with pathological changes either in the nares or pharynx or both.

(5) Sclerotic or atrophic changes of the naso-pharynx are of little

consequence in the production of deafness as compared with chronic hypertrophy or any morbid change producing congestion of the nose or throat.

(6) Of nasal affections, hypertrophy of the turbinals is the most potent factor in the production of aural disease. Deviated septum and exostoses influence the tympanic cavity by producing changes in the atmospheric pressure.

(7) Aural affections are more frequent in hypertrophies of the postnasal space or naso-pharynx than in either pure nasal or pharyngeal disease.

(8) The effects of passing disease of the nares or pharynx in the production of middle-ear disease is of much importance.

(9) General diseases, such as measles, with local naso-pharyngeal manifestations, exert a marked causative influence in the production of middle-ear disease.

(10) To a great extent the successful issue of aural disease depends upon appropriate naso-pharyngeal treatment.

BACTERIOLOGIC EXAMINATIONS IN DIPHTHERIA, WITH A REPORT OF ONE HUNDRED AND SIXTY CASES.[1]

By Robert L. Pitfield, M.D.,

Assistant Bacteriologist, Pennsylvania State Board of Health.

Within the past eighteen months I have made bacteriologic examinations of 160 swabs from the throats of patients ill, or supposedly so, with diphtheria.

In all these cases the swabs, having been sent to me by the medical attendant, were rubbed over the surface of blood serum and incubated. At the end of eight or twelve hours' stay in the thermostat, thin broad smears from the resulting growth were made over the larger portion of the surface of glass slides. This, of course, is the well-known procedure devised by Löffler.

While these cases herein reported cannot be quoted as being absolutely accurate, they are in the main very nearly so, and they are reported because the percentage of true cases of diphtheria among them is lower than usual. In this country the percentage of genuine cases is 72 per cent. I have found but 62 per cent. of the total number to be diphtheria.

[1] Read before the Medical Society of Germantown, May 10, 1897.

In not a few instances did the report accompanying the swab indicate that antiseptics had been used in the throat prior to the swabbing. Indeed, I frequently noted that solutions of corrosive sublimate had been applied fifteen minutes before taking the swab. Such practices, of course, render my findings uncertain, and would vitiate any results. Yet even from some of these cases growths of the diphtheria bacillus were obtained.

In one case a report was returned "not diphtheria," only to receive word by return mail that the child had died of true diphtheria. In this case antiseptics were applied before the swab was used, and all that could be seen upon examination were streptococci.

In the great majority of cases a true diagnosis of diphtheria can be made if the swab is used intelligently by the physician. It is, of course, important that no strong antiseptics should have been used directly before applying the swab, or even within twelve hours. The application of the swab should be firmly and thoroughly made with a twisting motion. The swab should be in firm contact with the freshest membrane, and not merely twisted about in the faucial space in mucus and saliva. Such a careless application insures not only a poor but a contaminated culture.

The following statement of the cases examined is not an elaborate one, the great majority of the patients were under the age of 8 years.

Cases in which bacilli were found . . .	99,—	62 per cent.
Cases in which bacilli were not found .	61,—	38 per cent.
	160	100 per cent.

Because of the irregular return of swabs from secondary examinations they are not reported.

The contaminated cultures, of which there were many, mostly contained the various staphylococci,—the streptococcus pyogenes and yeasts. While many physicians depended upon my report for a diagnosis, not a few, even in the latter stages of the disease in diphtheria, sent swabs to confirm their diagnosis, this was true where antitoxin had been used.

Regarding the differential diagnosis of tonsillitis and diphtheria, other than bacteriological, I have observed that where the report indicated chill, high temperature, very sore throat, headache, and much soreness and pain in the bones and muscles that the case generally proved to be tonsillitis. These symptoms, while having been frequently described as being those of the milder affection, are now merely confirmed. They are, of course, manifestations of a streptococ-

cus infection, and often of a severe type. While invasion of the uvula has been generally thought to be diagnostic of diphtheria, in at least three cases of severe tonsillitis has this phenomenon been observed.

It must be understood by the general practitioner that the isolation and positive identification of the Klebs-Löffler bacillus in a microscopical preparation is at times a difficult thing. In contaminated cultures, the great numbers of saprophytic organisms obscure the bacilli, and a careful and often prolonged search may not be rewarded by finding of the bacillus. This, however, I believe to be rare, especially if large smears are made and are thoroughly examined.

It would seem that the necrosed tissue is further decomposed and broken up by the saprophytes, or bacteria assuming that *rôle*, as the staphylococci and streptococcus pyogenes, and these, growing in great masses on the surface of the membrane, are easily removed by a superficial application of the swab.

The young involution forms of the streptococcus pyogenes resemble to a hasty observer the diphtheria bacillus. The elements of the chain are flattened and pressed together, and the terminal ones are larger and broader, giving a clubbed appearance, and the intermediate unstained spaces heighten the resemblance. A good lens and light, however, render this an easy matter after the eye is educated.

A distinctive feature of the bacillus is the irregular manner with which it takes up the stain; this is commonly called metachromatism. I have observed in certain cultures that this is absent, and the protoplasm takes the stain evenly throughout.

Apropos of staining, I have found for some reason that Löffler's formula does not always stain well, and the organisms are instantly decolorized upon washing with water. Various samples of Grübler's methylene blue in original packages were tried with the same result. Latterly, I have used a very dilute stain and have washed the preparation but slightly, frequently merely absorbing the staining fluid with bibulous paper.

As is well known, the bacilli vary greatly in size and appearance. The larger bacilli take the stain most irregularly. I have observed no connection between the relative size of the bacilli and their virulence.

In so far as metachromatism as a diagnostic feature of the bacillus is concerned, if it is marked and the bacilli are irregular in outline, and if it comes from a throat, it is the Klebs-Löffler bacillus. The terminal elements of a young chain of streptococci are more deeply stained, and often in microscopic fields containing the staphylococci different elements take the stain with marked difference of intensity.

In the examination of seemingly healthy throats for the diphtheria

bacillus, I have had no experience. Those found probably are of low grade of virulence and exist as saprophytes; but other than the occasional finding of the germ under these circumstances, the method has nothing against it, and thus far it has endured with the thankful approbation of all good clinicians.

MEMORANDUM.

A NEW PESSARY.

Of the various instruments usually employed for the relief of prolapsus uteri, I found none suitable in the following case:

A lady, aged 78 years, sustained a laceration of the perineum in her first labor. She had had a number of children since. For thirty years she had suffered from prolapsus of the uterus and vagina, with slight cystocele and rectocele. A cup-and-stem pessary was abandoned after several years' use, and nothing worn for eight or ten years except a cotton tampon occasionally. After failure to keep in place the atrophied uterus and relaxed vagina by the closed lever or ring pessary, all forms of which slipped down at once, and an operation being out of the question, I inserted a hollow rubber ball, two and one-fourth inches in diameter, such a ball as children play with. I compressed it after puncture to get out the air and inserted it, when it readily expanded, full of air, and gave prompt relief, its presence not being felt. The patient was at once free from the frequent desire to urinate, which was a constant symptom.

I am not aware that the principle involved in this little instrument has ever been applied to pessaries. It is the self-expansive force of the pessary, acting after insertion. By compression it enters the *unstretched* orifice of the vagina. It cannot get out except by recompression, or by wide dilatation of this orifice.

J. R. Dickson, M.D., U. of Pa., 1880.

Gettysburg, Pa.

EDITORIAL.

THE CEREBRAL COMPLICATION OF MIDDLE-EAR DISEASE.

The subject of cerebral abscess secondary to middle-ear disease has received considerable attention of late years, so that a general discussion may be omitted here. We owe much of our present knowledge of this condition to William Macewen, and anything he may say upon the subject deserves our careful consideration. In a recent discussion (*British Medical Journal*, No. 1820, 1895) he calls attention to certain important points that have not been heretofore sufficiently prominently brought forward.

As is well-known, it is frequently impossible to distinguish whether an intracranial abscess is situated in the cerebrum or in the cerebellum. It has been claimed that the distinction may be made by noting the presence or absence of the ability of the nerves to transmit sound by bone-conduction, and the rule is laid down that if bone-conduction remains the abscess is cerebral, while it is lost in cerebellar abscesses.

This reasoning is founded on two fallacies. The first is the assumption that the pyogenic germs reach the cerebellum by way of the internal ear, whereas cerebellar abscess, as a rule, results from pyogenic extension from the sigmoid sinus. The seventh and eighth nerves in the internal ear therefore remain unaffected and their function unimpaired; and if the mechanism of hearing remains intact, the auditory nerve will not only transmit sounds originating in the air but bone-conduction is not affected, notwithstanding the presence of cerebellar abscess.

The second fallacy supposes that a pyogenic process, spreading along the auditory nerve and its coverings, would destroy the possibility of bone-conduction. That this view cannot be held is shown by two cases reported by Macewen. The first of these showed at the post-mortem examination extensive purulent leptomeningitis, chiefly marked in the posterior fossa surrounding the right internal auditory meatus. On this side the seventh and eighth nerves and their coverings were so swollen that they were compressed in their bony casing, and a semipurulent exudation lined the pial sheaths throughout the internal auditory canal, and yet during the life of the patient bone-

conduction remained quite as good on the affected as on the well side. In the second case aerial and bone-conduction were both abolished. The autopsy disclosed a superficial abscess of the cerebrum, but the cerebellum was free from disease. It is fair to presume that the loss of function of the auditory nerve might have resulted from a previous chronic process, but the case emphasizes the error that would follow the acceptance of the statement referred to.

The relation of tubercle of the middle ear to intracranial disease, Dr. Macewen states, has not received the attention that its importance demands. Tubercle is one of the less obtrusive forms of middle-ear inflammation, spreading slowly and occasions but little pain. In some cases the disease reaches an advanced stage without causing perforation of the membrana tympani, yet its extension to the meninges—especially in children, whose sutures are still open—is always liable to occur. In two such cases referred to the post mortem showed that the invasion was by direct extension from the tuberculous focus in the middle ear through the ununited petro-squamosal suture to the membranes of the middle fossa of the skull. In tubercle of the internal ear the extension proceeds doubtless by the pial coverings of the seventh and eighth nerves in the internal auditory canal.

Perhaps even a more important *rôle* of tubercular disease of the middle ear is the liability to a pyogenic process, to which the former very greatly predisposes. Tuberculous products, wherever found, form excellent culture material for pyogenic cocci.

The importance of tubercle of the middle ear depends upon the complications that may follow. First, invasion of the membranes of the brain may occur from a focus of disease in the middle or internal ear. Second, tubercle of the middle ear, by its slow, disintegrating process, lays bare the intracranial contents and exposes them to pyogenic cocci whose potency has been increased by the pabulum which the liquefaction of the tuberculous process affords. Third, tubercle in the middle ear and mastoid antrum and cells may enter the circulation, and establish miliary tuberculosis of the lungs or other organs. The possibility of the latter will be appreciated when it is recalled that tubercle of the middle ear readily passes backward to the sigmoid sinus, inward to the recesses of the petrous bone, or it may even penetrate the jugular fossa.

The logical deduction is that tubercle here, as elsewhere in the body, should be thoroughly eradicated, if at all accessible. The mastoid process should be freely opened and the whole of the recesses of the frontal bone exposed, if this object is to be accomplished.

Another point of the greatest importance relates to the question of operating in the presence of swarms of pyogenic organisms. Fresh surfaces are thus exposed to the action of the germs, and serious intra-

cranial invasion may follow as the result of such a septic operation. The only safety lies in the application of the most rigid antiseptic measures. The general acceptance of the following propositions, advanced by Dr. Macewen, would go far towards diminishing the mortality in this class of ear troubles:

(*a*) Infectious diseases extending to the brain and its membranes, or to the organs of the body from the middle ear and its annexes, are preventable. (*b*) When once these diseases are established in the middle ear, it is necessary to adopt means which will insure their thorough eradication; and this must be regarded as a prophylactic measure against cerebral invasion. (*c*) When these diseases have once penetrated into the brain, not only does one require to remove the focus in the brain and that in the ear, but likewise the path between the two by which infection has travelled

ALUMNI NOTES.

Necrology.

Anthony Eugene Stocker, M.D., Class of 1840, died at his home in Philadelphia, May 23, 1897, aged 78 years. He served as surgeon in the civil war and was a prominent member of the Masonic order.

John C. Terrell, M.D., 1840, born in Person County, N. C.; died in Philadelphia, March 28, 1897, in his eightieth year.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

The next meeting of the Mississippi Valley Medical Association will be held in Louisville on October 5, 6, 7, and 8, 1897. All railroads will offer reduced rates. The President, Dr. Thomas Hunt Stucky, and the chairman of the Committee of Arrangements, Dr. H. Horace Grant, promise that the meeting will be the most successful in the history of the Association. Titles of papers should be sent to the Secretary,

Dr. H. W. Loeb.

3559 Olive Street, St. Louis.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

Cerebral Hemiplegia following Diphtheria.

Levi (*Archiv für Kinderheilkunde*, Vol. xxii, Parts i and ii, 1897) reports an unusually severe case of pharyngeal and nasal diphtheria treated with antitoxic serum, which developed on the sixteenth day paralysis of the palate and nephritis. Though many pitfalls, the case progressed to the thirty-third day. Suddenly, on the afternoon of that day, there was paresis of the left side of the face and of the left arm and leg. After a few hours the paresis disappeared and left only a slight weakness of the parts. In ten days there was another apoplectiform attack, more severe than the first, and was more lasting. On the following day the paresis of the face had disappeared, but the paralysis of the extremities remained. In nine days after there was sudden paralysis of the muscles of the neck, so that the chin lay against the sternum and the head on the left shoulder; also paralysis of muscles of the back.

The patient was now the subject of two sets of paralyses,—the palatal and neck paralysis and that of the face and extremities. The patient was fed by the stomach-tube; the urine gradually cleared up, and in about one month the patient left the hospital able to walk.

Cases of diphtheritic hemiplegia are very rare, this being the thirty-fifth case reported.

Such cases of hemiplegia have the same causes as ordinary hemiplegias,—namely, emboli, thromboses, or hematose.

One Hundred and Seventy-three Cases of Croupous Pneumonia in Children.

Schlesinger (*Archiv für Kinderheilkunde*, Vol. xxii, Parts iii to vi) thus concludes a most exhaustive article: Mobility croupous pneumonia occurs most frequently at the fourth year. In the younger cases boys are attacked about twice as frequently as girls. The sick are usually of strong constitution. It occurs most frequently from March to May.

Fever occurs, either without any prodromes, in about ten hours, or by slight prodromes lasting one or two days, in about three or four hours. The younger the child the higher the fever, and the more frequently the fever is remittent or intermittent.

Pneumonia of the apex usually has a more severe fever than that of the lower lobes. Lysis is less common than in adults.

During the course of the disease fever, temperature, and pulse are parallel. In crisis fever and pulse fall together; the respiration more slowly.

The exudate does not limit itself so strictly to the single lobe affected as it does in adults, but the borders of the neighboring lobes are likewise affected. It is of the greatest rarity that a pneumonic lung in children becomes gangrenous or tuberculous. The pneumonia usually develops without marked initial symptoms. Chill is much less frequent than in adults, and vomiting is much more common. Immediately before the crisis the chill is frequently worse than usual. Nine of the cases were abortive. In these there was marked consolidation, which quickly passed away.

Pneumonia migrans is the most fatal form in children. A relapse is very infrequent. There is always a leucocytosis in the height of the pneumonia. The number of red cells is lessened after the crisis. Bronchitis is a frequent complication in the beginning. Pleurisy is the most frequent complication, usually recovers, and seldom becomes purulent. In only one case was there a hemorrhagic nephritis. Middle-ear disease is frequent, and is especially frequent in the first three years of age and with right-sided pneumonia. The mortality is less than in adults,—4½ per cent.

Treatment should be free use of the cold bath and alcohol.

Intussusception in Infants treated by Abdominal Section.

Pitts (*Lancet*, June 12, 1897) cites seven cases of intussusception successfully treated by this method. The following remarks seem fitted for this department. Until recent years it has been the practice to exhaust all other methods of treatment before laparotomy was resorted to. Physicians whose cases are now admitted employ inflation and manipulation only when the patient is in good condition, and has come very early under notice, and are satisfied that an abdominal exploration should be undertaken when reduction is not promptly brought about. Abdominal section may be now undertaken in infants without great risk from shock, if proper precautions are taken. He considers the following statements to be correct: (1) In cases of recent acute intussusception distention of bowel by air or water, combined with gentle external manipulation, may be tried under an anesthetic. The surgeon, however, should be present, and prepared to act at once if a satisfactory result is not quickly obtained. (2) An exploratory incision should be made *without* preliminary inflation when, from severity of the symptoms or the chronicity of the cases, such inflation would be dangerous.

Panquin's Antitubercle Serum.

Prioleau (*New York Medical Journal*, June 26, 1897) reports thirteen cases of tuberculosis of the lungs or larynx, with the cure in two cases and benefit in eleven, with one case unaffected. He states that the serum is manufactured under the supervision of the Missouri State Board of Health, and hence there can be no fraud. It acts in the same manner as does diphtheria antitoxin. Death has never occurred, and only on two occasions were there any bad results. He uses the serum hypodermically, unless it cannot be borne, and then he uses it

per rectum in double the dose. He has seen many of the worst symptoms disappear.

It may be remarked that all these cases received other medication and were treated at Summerville, a health-resort.

The Plague Prophylactic Fluid.

Hafkine (*British Medical Journal*, June 12, 1897) reports some results of a prophylactic fluid made by a cultivation of the plague bacillus. The first individuals injected were inmates of a home of correction. One hundred and fifty-four prisoners submitted to injection. All had been exposed. Among those inoculated there were two developed cases, with no deaths. Among the non-inoculated, twelve cases developed, with six fatal. It appears from some other observations that the disease can be arrested when in an advanced stage of incubation.

Between January 10 and May 6, 1897, 11,362 individuals have been inoculated with twelve fatal cases,—three of these were unwell; three contracted the disease within twelve hours, those attacked and recovered were thirty-three.

It is impossible to get figures relating to the general population, but a rough estimate seems to indicate that the inoculated have suffered to an extent about twenty times smaller than those living under the same conditions and exposed in the same manner, and who have not been inoculated.

Serum Reaction in Typhoid Fever.

Pakes (*Lancet*, May 29, 1897) has examined sixty cases, some normal individuals and some with typhoid fever. He uses coagulated blood, collected in a pipette, and *not* dried blood. His conclusions are as follows:

(1) As a quantitative reaction (when the serum is sufficiently dilute and the "reaction time" short) the test is of great value when the result is positive.

(2) If a sufficiently long interval has elapsed since the onset of the disease, a negative result is of value. When a larger number of observations have been made in the early period of the disease, negative results will be of greater value.

(3) The microscopic reaction is more speedy and more delicate than the macroscopic reaction.

(4) Results of certain observers show that too strong serum, acting for so long a time as twenty-four hours, may give a positive reaction in the normal individual.

The Plague.

The commission for the study of the plague, sent out by the Imperial Academy of Sciences of Vienna, have made a report in the *Wiener klinische Wochenschrift*, May 20, 1897. The report is made upon seventy cases of the plague, together with forty-seven anatomical and bacteriological observations. They describe the plague as an infectious disease that, in spite of many variations, has a general set of symptoms very characteristic and which do not resemble to any great degree any known disease. The most frequent form of the disease is the septic hemorrhagic form, characterized by primary hemorrhagic buboes, most common in the groin, axilla, or cervical region. The surround-

ing tissue is frequently markedly edematous. There are numerous hemorrhages of variable size in different organs. There is acute enlargement of spleen (spleen tumor).

There is more or less involvement of the various lymph organs, the lymphatic glands, follicles of the intestine, mouth, and also of the tonsils. There is also acute degeneration of the internal organs. Sometimes in this form the bubo fails to appear, and the case has the exquisite hemorrhagic character. A second form is known as the septico-pyemia, because of the numerous emboli in the internal organs, especially the lungs, liver, and kidney.

A third form is the primary plague, pneumonia. In these cases there is a primary confluent lobular pneumonia, almost always without any noteworthy implication of the lymph apparatus.

The point of entrance of the poison is usually through the skin. In such cases there is usually a primary bubo.

Doubtless some cases have their beginning in the lungs, a still smaller group in the tonsils. The observers have not come across a case in which they considered the digestive tract as the seat of beginnning.

In every case which was not quickly fatal the tumors of the glands or the buboes themselves suppurated.

The clinical picture is that described by Griesinger,—injected conjunctivæ, dull, often unbearable headache, delirium, muttering speech, vertigo.

The attack begins suddenly, with fever, chill, and often with vomiting. There is the picture of a severe infection with the characteristic buboes and weak heart. The buboes are small in the beginning and usually enlarge gradually. Sometimes they are absent in the beginning.

Death often occurs in the first twenty-four hours from failure of the heart. In these cases the radial pulse rapidly fails, cyanosis and dyspnea develop. The respiration varies from 30 to 60 per minute,—in cases of primary pneumonia often 70 per minute. Some cases are never delirious; others become quickly so. Sometimes the patient sinks into a typhoid state; often the patient attempts to flee from his nurses.

The fever is usually intermittent. Herpes is never present, even in the cases of pneumonia.

There is always an acute splenic tumor, otherwise there is no disturbance of the abdominal organs. The urine always contains nucleo and serum albumin, about ½ per cent. (Esbach).

In the cases which recover there is seldom any nervous disturbance; but the convalescence is long and tedious.

The diagnosis in cases with bubo is easy; in other cases, pneumonia for instance, the diagnosis can be made by examination of the sputum. Still others, without bubo, one dependent upon the general symptoms as given above.

Therapeutics are of little value. Incubation lasts usually four or five days.

The bacillus described by Yersin and Kitasato is doubtless the cause of the disease.

The authors have found the bacilli in many cultures from the various organs of the dead and from the blood of the living.

The authors have had no good results from the use of Yersin's serum in their Bombay cases. The cases are spread from man to man and possibly from rats to man, and indirectly through infected objects.

Careful hygienic measures will prevent the spread.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

ELLWOOD R. KIRBY, M.D.

Prostatic Enlargement.

Cicchanowski (*Centralblatt für Chirurgie*, No. 32) publishes the following results of his investigations on prostatic hypertrophy:

(1) Arterial sclerosis cannot be regarded as the cause of the morbid changes in the kidneys, bladder, and prostate, which, according to Guyon, constitute a diffused morbid condition, called by this surgeon "prostatism."

(2) The anatomical basis of the insufficiency of the bladder, in every case presenting the clinical characters of the so-called prostatism, is a quantitative change in the relation of the vesico-muscular structure to the connective tissue.

(3) This quantitative change is a regular phenomenon of advanced age, and increases in intensity as the patient gets older. It has reached a high degree when the discharge of urine is prevented by mechanical obstruction, and a still higher degree when a chronic inflammation of the bladder is established.

Unless in very exceptional cases, it is only with an association of these three morbid conditions that any serious urinary trouble occurs. Such troubles may be prevented, to a certain extent, by a compensatory hypertrophy of the vesical muscle, which usually coexists with the presence of a mechanical obstruction.

Hypertrophy of the prostate, in the author's opinion, is the first stage of the morbid condition known as prostatism, and must not be regarded as a new growth, but as the result of a chronic inflammation sometimes affecting the glandular elements, sometimes the stroma, but most frequently both of these elements. The amount of prostatic enlargement depends upon the intensity of the inflammatory process, and, above all, on the parts of the gland most affected. The more the glandular portion is involved, the greater the tendency to enlargement.

Intussusception.

D'Arcy Power (*International Journal of Surgery*, June, 1897) summarizes his experience as follows: Intussusception is a condition which brooks no delay in its treatment, for something must always be done at once, except, perhaps, in those slight cases which are indistinguishable from severe colic. In all doubtful cases purgatives should never be used. The routine treatment is to chloroform, high enemata of best saline solution, the fluid being allowed to remain in the intestines for at least ten minutes. The earlier this method is adopted after the appearance of symptoms the better are the results obtained; but it should not be adopted in enteric intussusception, in cases where the symptoms are very acute, or in those where the absence of signs or symptoms, with a subnormal temperature, leads the surgeon to suspect gangrene of bowel. In these cases and when the intussusception is not reduced after irrigation has twice been tried, or when after reduction the intussusception has

thrice recurred, the abdomen must be opened. The surgeon must then be prepared to deal effectually with the conditions he may find by such operative means as he can carry out with the least amount of shock and in the shortest space of time that is compatible with the safety of the patient. He should bear in mind that hardly a case can arise in which he is justified in closing the abdominal wound without an attempt to complete the operation by reducing or removing the intussusception. Such half measures as the formation of an artificial anus are hardly ever justifiable, and the results thus obtained are, usually, most disastrous. In the light of our present knowledge, it appears that the use of a button or bobbin is most likely to give good results when enterectomy is necessary, while Maunsell's operation is best adapted for the cure of ileo-cecal and colon-colic forms of intussusception.

Harelip.

Abbe (*International Journal of Surgery*, June, 1897) states that the old Malgaine operation has been very generally abandoned. In mild cases all that is needed is a simple plastic operation adapted to the individual case. In the more serious deformities the nostrils are flaring, and when the intermaxillary mass is attached to the nose, no simple procedure can be described for any case.

The author pares off and sacrifices a portion of the red lip on the best side, and then brings down a mass on the opposite side to make the central portion of the lip. It is necessary, however, to take into consideration the displacement of the tip of the nose to the side opposite the cleft; it must be brought forward with considerable force and held there. He has recently adopted the plan of inserting two heavy Hagedorn needles, one in the skin under the columnæ, and the other in the alæ nasi at the side which rises, driving them through the lip into the bone. This procedure keeps the parts absolutely in place.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Airol, Dermatol, and Iodoform.

Haegler (*British Medical Journal*, April 24, 1897) reports the results of a comparative chemical, physiological, bacteriological, and clinical study of these antiseptic powders. The replacement of antisepsis by asepsis has lessened the field of usefulness of iodoform, the most particular indication for which is found in the case of tuberculous abscesses. Dermatol, a compound of bismuth with gallic acid, is more valuable for its astringent than for its antiseptic qualities. Lüdy conceived the idea of forming a compound of dermatol with iodine, and thus airol was produced as a tasteless and odorless powder, unaffected by light, and containing 44.5 per cent. Bi_2O_3 and 24.8 per cent. of iodine; its color is gray-green, but moist air or the discharge from a wound rapidly converts it into a red

substance, with liberation of iodine. It is insoluble in ordinary reagents, but readily dissolves in strong caustic soda or weak mineral acids. Haegler's first experiments related to the toxic effects of these antiseptics, weighed quantities of which were injected under the skin or into the peritoneal cavity of animals. The lethal subcutaneous dose of dermatol was 5 to 6 grains per kilogramme of body weight, of airol 3 to 5 grains, of iodoform 1 grain; intraperitoneally the respective doses were 1.2 to 2 grains, 1.2 to 2 grains, and 1 grain. Airol and dermatol both killed by chronic bismuth-poisoning; nevertheless, out of over 2000 patients treated with airol by the author, not one showed a single sign of bismuth intoxication. The three drugs were next administered to animals in food, and here again it was found that iodoform was by far the most toxic, although the amount taken was the smallest owing to the subjects being repelled by the smell. With regard to dermatol and airol, the latter was the less poisonous, and it was noticed that both were better borne by carnivora than herbivora. In fatal cases of dermatol-poisoning perforation of the stomach was frequently observed; this was not seen in animals killed by the administration of airol. Haegler finds that the delay in the growth of organisms produced by airol is slightly greater than that resulting from iodoform, and infinitely more than the effect of dermatol. It is found that the influence of antiseptic powders is greater the earlier their use is commenced; in acute phlegmonous processes, however, they do but little good, while the more chronic the inflammation the better the results obtained, whence their special indication in tuberculosis. The two great advantages in this respect which airol has over iodoform are, first, the fact that a small quantity of its iodine is liberated immediately it comes in contact with the tissues, and, secondly, that the presence of bismuth exercises a powerful desiccating influence upon the secretion, thereby greatly aiding antisepsis. With regard to the preparation to be used, both iodoform and airol are disintegrated by attempted sterilization, but the powder is a perfectly safe form, if dust is carefully excluded. The author also uses airol gauze (20 per cent.) as a dry dressing, and describes its effect in producing a small, hard scab in one to two days as marvellous; its value is particularly striking in superficial lesions, such as ulcers and burns. In tuberculous abscesses the form employed is a 10-per-cent. emulsion in equal part of glycerin and water. A final point in favor of airol is that it is extremely bulky, being four times as light as iodoform, and twice as light as dermatol.

Influence of Somatose on the Milk of Nursing Women.

Drews (*Revue de Thérapeutique Médico-Chirurgicale*, No. 13, 1896) believes that this food exerts a specific influence on the mammary glands of nursing women in that it produces an abundant flow of milk and rapidly relieves the disorders observed during lactation. He recommends it when the quantity of milk is insufficient, and when at the commencement of lactation the flow seems about to cease. The dose is three to four teaspoonfuls daily, taken in milk, hot bouillon, or cocoa. It has hardly any taste, and is therefore easily administered.

Potassium Iodide in Cholelithiasis.

Dunin (*Gazeta Tekarska*, No. 22, 1896) states that during the last four years he has tried the internal administration of potassium iodide—five to ten grains twice daily—in about 100 cases of cholelithiasis, and has come to the con-

clusion that the drug is one of the best remedies for the disease. The most striking effects are obtained in cases where the attacks of hepatic pain, while of moderate intensity, occur very frequently, or where the pain is almost continuous. In the violent attacks occurring at long intervals, the results of the administration of the iodide are much less pronounced.

Treatment of Consumption by the Oil of Cinnamon.

Thompson (*British Medical Journal*, November 7, 1896) reports five cases of well-marked phthisis which were considerably benefited by the inhalation of the oil of cinnamon. The author concludes that oil of cinnamon, when used as an inhalation in certain stages of consumption, affects injuriously tubercle bacilli, is rendered probable by the very remarkable way in which the organisms diminished in numbers or disappeared from the sputum in a comparatively short time after commencing treatment. Also by the tendency for the disease to relapse when inhalation was discontinued. It appears probable that the oil of cinnamon tends to cure consumption in two ways: first, in the very early cases of catarrhal phthisis, by so directly affecting the bacilli as to stop their growth; and, secondly, in cases that are rather further advanced, by only allowing organisms incapable of growth to pass along the bronchi, and thus prevent the infection of fresh lobules. In this way the disease may be limited to a small area, where it can be dealt with by the vital processes of the body, and cut off from the system by the formation of fibrous tissue, and so cease to be an immediate source of danger. Besides the five cases abstracted the drug was tried in the more advanced stages of the disease, but, as might be expected, without any benefit.

An interesting feature of the above cases was the order in which the symptoms subsided. The expectoration and the cough were the first to improve, then the temperature tended to the normal, and finally the weight began to increase. These favorable changes in the symptoms were accompanied by a gradual diminution in the number of tubercle bacilli in the sputum.

Holocain.

Gutmann (*Deutsche medicinische Wochenschrift*, March 11, 1897) relates his clinical investigations with this new anesthetic, which is closely allied to phenacetin. The chloride of holocain crystallizes in white needles, dissolves in hot water, but is only sparingly soluble in cold water. If the salt is heated with water in a glass vessel the solution is often cloudy, owing to a small amount of alkali present; hence a porcelain vessel should be used. The author first records his experiments upon rabbits. He has used it in thirty cases in men, of which thirteen were examples of a foreign body in the eye, two of keratitis, seven of operations on the eye, and in eight cases the eyes were healthy. One minute after the introduction of three to five drops of a 1-per-cent. solution there was anesthesia of the cornea. A passing burning sensation was felt. The foreign bodies were removed without inconvenience, and the galvano-cautery was used in a case of corneal ulcer and in a case of keratitis. Tattooing was also performed in two cases of leucoma. In one case it was possible to compare tenotomy of the eye muscles under cocaine and under holocain. Less pain was experienced in the latter instance. The duration of anesthesia under holocain is from five to fifteen minutes. The cornea remains moist and shining. The ocular tension is not diminished. The pupil remains unaltered and accom-

modation is unaffected. In a patient aged 48 years three drops of a 2-per-cent. solution of cocaine were introduced into one eye; anesthesia appeared in two and a half minutes, and lasted three and a quarter minutes, the pupil dilated, and the tension diminished. With three drops of a 1-per-cent. solution of holocain introduced into the other eye anesthesia appeared after a slight feeling of burning in one minute, and lasted nine minutes, the pupil was not dilated, and there was no alteration in tension. The rapidity of anesthesia with holocain is an advantage. The dilatation of the pupil under cocaine for the removal of foreign bodies is a disadvantage. The lessened pressure is a drawback in cataract extraction, but useful in operations for glaucoma. The author says that holocain should not be used subcutaneously, as intoxication symptoms were rapidly produced by a small dose in a rabbit. For external use he recommends it as a substitute for cocaine.

Contraindications of Lavage.

Collignon (*Journal de Médecine*, August 10, 1896) remarks that, although a great deal of comfort may ensue from washing out the stomach in cases of cancer, it not infrequently happens that the general condition becomes rapidly worse, the patient dying from what seems to be an auto-infection. He explains it in the following manner: The dilated cancerous stomach has its motor and absorptive power reduced to a minimum, as may be shown by the salicylate method. On being washed out, however, its contents are removed, and its surface freed from mucus; absorption is then restored; but the malignant growth continuing to pour toxic products into the organ, these can be now rapidly absorbed. In this way the general condition may be rendered rapidly worse, and the author has collected several cases in support of his opinion. He therefore recommends that lavage be reserved for early cases, when the economy is better able to deal with any products which may be absorbed, and that it should not be attempted in the later stages of the disease.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

The Treatment of Abdominal Wounds.

La Torre (*La Gynécologie*, April, 1897), in a very extensive paper upon this subject, aided by experimentation upon twenty-five dogs, determines that hernia after celiotomy is chiefly due to the defective union of the musculo-aponeurotic layer or relaxation of the cicatrix, conditions which lead to the union of this layer by second intention, circumstances which relax, tear, and predispose to relaxation of the cicatrix. A good closure of the abdomen re-

sults from three principal factors,—the tissues divided and sutured, the suture material, and the method of applying it. The suturing of the aponeurotic tissue of the linea alba is often the cause of hernia, which does not occur, the incision is through the muscle. The incision should be made through the linea alba, and before closing it the aponeurotic tissue should be removed as far as the muscular substance of the recti, and the sheaths and muscles sutured. In old or sterile women the layer suture of the linea alba may be employed if the conditions necessary for a good cicatrization can be gained during and after operation, but as that is almost impossible the incision may be made through the rectus muscle. He removes the linea alba in all cases before closing the abdomen. In cases of secondary closure the incision and suture should always be in the substance of the muscle. Silk and catgut are the more preferable suture materials. The layer suture is best, uniting separately the peritoneum; if possible the posterior layer of the sheath of the rectus muscle, the rectus muscles, the anterior layer of the rectus muscle sheath, the skin, and subcutaneous tissue. Every effort should be made to gain primary union.

Influenza and its Relation to the Female Generative Organs.

Mueller (*Centralblatt für Gynäkologie*, No. 24, 1897) writes of the history of influenza, and believed that a great percentage of patients having this disease also have affections of the genital apparatus. A chief characteristic of influenza is, in his experience, hemorrhage from the uterus, which is usually associated with severe pain in the lower abdomen. He has also noticed that ordinary therapeutic measures have little influence on these symptoms. In women previously having amenorrhea hemorrhage may return with this disease; also those already having disease of the sexual organs are subjected to an increase of symptoms. Undoubtedly, where there is still present old inflammation, as in the parametrium, influenza causes exacerbation, and in certain cases acute exudation; pelvic peritonitis shows a tendency to diffuse extension. Frequently cases of metritis and endometritis are unfavorably influenced, also tumors grow uncommonly rapid; further, not rarely, disturbances of the bladder are brought about by influenza. Peculiar also is its unfavorable influence on pregnancy, for in a very large percentage of cases abortion results. In labor influenza not rarely produces psychical depression, apathy, and the pains are uncommonly severe. During the puerperium the hemorrhagic lochia continues often for a week, and lactation appears hindered.

Müller explains these unfavorable influences by the disease causing a general hyperemia, through which, for example, hemorrhagic endometritis is produced. The production of acute inflammation may be explained in two ways: Influenza either directly causes the inflammation of the uterine mucous membrane and parametrium cellular tissue, or the parametritis is a secondary affection, secondary from the inflammatory disease of the uterine mucous membrane. Naturally, also, the toxines produced by the influenza bacillus must have a general influence. The writer then refers to the special treatment of this disease, and states that the decrease in the number of births in 1890 can be explained through the influenza epidemic.

Engel (*Orvosi hetilap*, 1896, Nos. 35 and 36; *Centralblatt für Gynäkologie*, No. 24, 1897) gives a number of statistics and generally agrees with the above writer in regard to the influence of influenza. He states that during the epidemic year (1890) the number of births were in Hungaria 41,866 less than the

previous and following three years; in September and October alone there were 19,768 less children born than in the same months of other years.

Residual Gonorrhea.

Sanger (*Annals of Gynecology and Pediatry*, May, 1897) states that in progressed gonorrhea, where the infection has long since been extinguished, there is left in the tissues numerous characteristics, even specific signs, which he terms residual. These residual signs may affect the vulva, urethra, vagina, uterus, adnexa, pelvic peritoneum, the parametrium, and rectum. The *vulva* as *vulvitis maculosa persistens*,—an affection of the mucous membrane of the vestibule around the duct-openings of the glands of Bartholine. As a glandular adenitis of the glands of Bartholine, the glands being felt on one or both sides as hard nodules, the size of a pea or hazel-nut, as a round or oval, shallow, clearly circumscribed ulcer, which is exterior and inferior to the duct-opening which he believes is a result of abscess of the gland rupturing after necrosis of the mucous membrane. Or a cyst of Bartholine's gland, which is the most frequent residual sign in the vulva.

The *urethra* as a *urethritis maculosa externa persistens*,—the formerly described, sharp, limited, dark-red spots or rings of the external meatus. As various forms of chronic urethritis, analogous to those of the male urethra described by Oberlander. As structures, which are the most common cause of vesical and urethral tenesmus where the urine is normal. As chronic periurethritis in the form of a ridge the thickness of the ring-finger.

The *vagina* as *colpitis maculosa persistens*. The mucous membrane of the vagina and vaginal portion of the cervix, especially those parts which have few folds, show dark-red spots similar to the maculæ of the vulva. As *colpitis granularis persistens*, described as vaginitis papulosa. The granules or nodules are smaller and harder than those of acute granular colpitis of pregnant women. He believes also that certain cases of *colpitis atrophicans obliterans* and *colpitis senilis hemorrhagica* certainly depend on gonorrhea originally; also many cases of pruritus vulvæ.

The *uterus* may be involved as *endometritis* and *metro-endometritis chronica post-gonorrheica*. He says in cases in which considerable time has elapsed since gonorrheal infection and repeated examinations of uterine secretions has failed to show gonococci, even where the discharge is quite purulent, and those in which it has been artificially increased, it is permissible to assume that we have to deal with a residual form of gonorrhea. As a perimetritis chronica post-gonorrheica this affection in a pure form, not as a part of a pelvo-peritonitis diffusa, is rare except as a gonorrheal affection.

The *adnexa uteri* and *pelvic peritoneum*. It appears as salpingitis, perisalpingitis, oöphoritis, perioöphoritis, and pelvo-peritonitis chronica residualis.

The *pelvic cellular tissue*,—the parametrium. Here it cannot be decided whether it is gonorrheal in origin until gonococci are found in the acute exudate.

The *rectum*. Strictures of the rectum, he says, are obscure in etiology, but are to be regarded as largely gonorrheal.

PATHOLOGY.

UNDER THE CHARGE OF

JOHN GUITÉRAS, M.D.,

ASSISTED BY

DAVID RIESMAN, M.D.

The Presence of the Pneumococcus in the Dust of Hospital Wards.

Netter (Société de Biologie, séance du 29ème Mai, 1897; *La Semaine Médicale*, June 2, 1897) demonstrated after the manner of Cornet the presence of virulent pneumococci in the dust of a hospital ward.

Toxicity of Human Sweat.

Arloing (*La Semaine Médicale*, June 2, 1897, p. 209) found the human sweat toxic for animals. If the intravenous injections did not produce a fatal termination in from one to three days, the animals died later in a cachectic state. The toxicity varies with the circumstances that accompany or precede sweating, with the individual, the mode of preparing the extract, and the susceptibility of the experimental animals.

The Curative Power of Fever.

A. Loewy and P. F. Richter (*Berliner klinische Wochenschrift*, March 1, 1897) energetically defend a view now held by a large number of clinicians that fever in acute infectious diseases is one of the weapons of defence possessed by the animal body. In proof of this they detail a series of experiments on rabbits, consisting in the production of high temperature by the "heat-puncture,"—*i.e.*, by injury to the corpus striatum and subsequent inoculation of the animals with the minimal lethal dose or its multiple of pneumococcus, hog-cholera (Schweinerothlauf), and diphtheria. The results showed that the animals in which fever had artificially been produced lived longer than the controls; some, indeed, survived the infection.

Although indicating the curative power of fever, the authors do not oppose the proper use of antipyretic measures, when these have favorable incidental effects (quieting the nervous system, etc.). But they add, it may be profitable to search for pyretic agents,—*i.e.*, such that evoke an artificial rise of temperature.

Concerning the Diseases of the Nervous System due to Atmospheric Pressure.

The gigantic engineering feats of the present age have in many instances been accomplished only after heavy sacrifice of human life. One of the powerful agencies of death has been the caisson used in building bridges. During the construction of the Ead's bridge at St. Louis thirty out of three hundred and fifty-two laborers became seriously ill, and twelve died. At the present day precautions are taken which lessen the perils of caisson work, yet the men in

time grow careless and accidents still happen. A. Hoche, in an excellent paper, describes two cases, and enters at length into the pathogenesis. In both instances the spinal-cord disease took the character of an incomplete transverse lesion, in the one case involving chiefly the lateral columns, in the other the posterior as well as the lateral. The disease was brought on in the two cases by a too rapid passage from the high pressure of the caisson to the outer atmosphere. Although very varied symptoms may manifest themselves, the majority of cases present spinal paraplegia of the dorsal cord region.

Regarding the etiology, the author basing himself on experiments made by Paul Bert, comes to the conclusion that the condition depends on an embolic occlusion of the spinal arteries by liberated gas, chiefly nitrogen. The gaseous emboli act exactly like solid particles, and bring about an ischemic neurosis of the nervous substance without any noteworthy laceration of the tissue. The reason that the dorsal cord bears the brunt of the disease is to be found in the peculiarities of the vascular supply, as pointed out by Kadyi.

A certain amount of gas is set free *in situ*, but the greater and more noxious part is brought by the arterial stream.

The fact that the emboli are gaseous and therefore rather easily absorbable, determines a relatively favorable prognosis.

If the quantity of gas liberated is very large, it may lead to speedy death from embolism of the larger arteries of the lung, brain, etc.

Treatment of Pruritus Vulvæ.

Ruge (*Centralblatt für Gynäkologie*, No. 18, 1896), in discussing the treatment of pruritus vulvæ before the Gynecological Society of Berlin, considered that the disease must be regarded as due almost always to a local cause,—namely, chronic or bacteriological irritation,—and that by a thorough cleansing of the inner and outer genitalia, almost without exception, even in the most difficult cases, healing is obtained. Even in cases of fresh gonorrhea he recommends a thorough washing and scrubbing with soap of the genitalia, in order to remove all germs. In this way he believes that many women could be saved from the after-consequences of gonorrhea.

In the subsequent discussion Martin warmly indorsed the method of treatment recommended by Ruge. He advised in addition shaving the pubis and dusting on powdered sulphur.

Flaischlen confirmed the favorable effect of a systematic scrubbing of the outer genitalia with soap and water in women suffering from pruritus. The combining of this washing with a subsequent application of silver nitrate he considered especially effectual. The strength of the silver solution to be used varies. In most cases a 20-per-cent. solution is strong enough. In one case, however, he was obliged to use a 50-per-cent. solution before obtaining a cure.

Glockner regarded most favorably a one-per-cent. solution of zinc sulphate; next after this a 10-per-cent. aristol salve.

Gottschalk recommended for pruritus a 10-per-cent. thymol salve and also a cocaine-menthol salve to relieve itching. In pregnancy he considered that pruritus ought to be regarded in most cases as only a local manifestation of a general pregnancy neurosis, as these women complained most of itching of the skin in general.

Olshausen held most cases of pruritus to be conditional upon diabetes, less often to be due to an affection of the vagina, and in a very small number of cases they must be regarded as a pure neurosis. He considered the practical

proposition of Ruge as certainly very valuable, but suspended judgment as to whether the treatment would be a valuable therapeutic agent in a case of pure neurosis until the method had been given a more extended trial.

Bodenstein has likewise seen rapid cure result from washing the vulva in pruritus. In one case where an application of a 20-per-cent. solution of silver nitrate was unsuccessful, cure was at once obtained by washing the skin with a 1-per-cent. solution. In gonorrhea he has been in the habit of a mechanical scrubbing out of the vagina for the last three years. He touches the mucous membrane in spots with sublimate and in some cases packs the vagina.

Ruge advised against using a speculum in cleansing the vagina.

DERMATOLOGY.

UNDER THE CHARGE OF

LOUIS A. DUHRING, M.D.,

ASSISTED BY

M. B. HARTZELL, M.D.

Lesions apparently Tuberculous cured by Antisyphilitic Treatment.

Alfred Fournier (*La Médecine moderne*, May 22, 1897) brings forward this subject at a meeting of the French Society of Dermatology and Syphilology, the case being that of a man in whom a history of syphilis seemed to be excluded, who had a history of general tuberculosis in addition to the cutaneous ulcerated granulomata. Under one injection of calomel subcutaneously there was improvement in the lesions of the skin, and under a few more injections he was nearly cured. Augagneur, of Lyons, confirmed the views suggested by Fournier, citing two similar cases. Jacquet also reported a case, that of a young woman recently confined, who, after puerperal fever, developed acute osteomyelitis of the left thigh so grave that Dujardin-Beaumetz thought of proposing amputation, but under Gibert's syrup the woman recovered completely. Fournier thinks that the moral to be drawn from such cases is that mercury and iodine cannot be regarded as reactive drugs proving the existence of syphilis.

The Nature, Cause, and Mechanism of Common Baldness.

M. Sabouraud (*Annales de Dermatologie et de Syphiligraphie*, No. 3, 1897) from a study of baldness, to which he was led by his former studies of tinea, alopecia areata, and seborrhea, concludes as follows: The specific micro-bacillus of fatty seborrhea, when introduced into the pilo-sebaceous follicle, produces four constant results: (*a*) Sebaceous hypersecretion; (*b*) sebaceous hypertrophy; (*c*) progressive papillary atrophy; (*d*) death of the hair. These phenomena result from seborrheic infection upon smooth regions as well as upon the hairy ones. Upon the scalp the vertex is the seat of election of this infection. Common baldness is only a chronic fatty seborrhea of the vertex. Not only is follicular seborrheic infection indispensable in the production of baldness, but this

seborrheic infection remains intense, pure, and permanent until the baldness is fully and permanently established. Common baldness is, therefore, a perfectly characterized, specific, microbic malady.

Actinomycosis of the Skin treated with Large Doses of Iodide of Potassium.

Kozerski (*Archiv für Dermatologie und Syphilis*, Band xxxviii, Heft 2), in reporting a case of actinomycosis of the cheek, concludes as follows: In pure infection with the actinomyces fungus the pus secreted is not always thin. This fungus alone, without the admixture of the ordinary pus-producing micro-organisms can produce suppuration. The entrance of the common pus-producing micro-organisms into actinomycotic foci does not kill the fungus; but, on the contrary, may bring about such conditions as favor its development. Microscopic examination by means of methods in which staining is not employed is, in many cases, inadequate. In cases in which the diagnosis lies between actinomycosis and late syphilis it is not justifiable to make the diagnosis *ex juvantibus*, especially when iodide of potassium has been given. In view of the growing number of cases in which iodide of potassium has produced healing or decided improvement it would be appropriate in every case of actinomycosis to begin the treatment with this remedy.

The Use of the Rontgen Rays as a Depilatory.

Freund (*Archiv für Dermatologie und Syphilis*, Band xxxix, Heft 1), at a recent session of the Vienna Dermatological Society, presented a case of nævus pigmentosus pilosus in which experiments with the cathode rays had been made, with the purpose of testing their effects upon the hair-growth. The neck, back, lateral parts of the thorax, and the upper part of the arm were covered with a thick growth of hair. The nape of the neck was daily exposed for two hours to the cathode rays; on the eleventh day the hair began to fall out spontaneously, and bunches of hair could be extracted with slight traction. Notwithstanding that the use of the rays was now suspended the hair continued to fall until a total alopecia of the lowest part of the occiput had occurred. Before the completion of the alopecia there was a diffuse reddening of the exposed part, upon which several excoriated places which oozed abundantly appeared; these quickly healed under treatment with ichthyol salve. Examination of the fallen hairs showed an atrophic pointed hair-root instead of the usual thickened hair-bulb. In order to demonstrate that the cathode rays were the active agent anode rays were used for twelve days without result. As the result of these experiments Freund concludes: The above-mentioned effects were produced by the cathode rays. The long, thin, body hairs are caused to fall more easily than the strong short hairs of the nævus.

The cathode rays only exhibit their effect after one or two weeks' illumination; this effect is cumulative, and continues for two weeks after the suspension of the use of the rays. During the six weeks the patient was under observation there was no renewal of the hair.

Hereditary and Continuous Shedding of the Finger-Nails.

Montgomery (*Journal of Cutaneous and Genito-Urinary Diseases*, June, 1897) reports an interesting example of hereditary shedding of the nails in a man 35

years of age. The patient's mother and two maternal uncles were affected in a similar manner; the father, one paternal aunt, two paternal uncles, and one cousin also had bad nails, but they did not fall off. The affected nails grew dull, yellowish-white in color over the lunula, gradually loosened from the nail-bed, and fell off. The process was a slow one, requiring three months to be completed. New nails grew in in from three to eight months, and were apparently perfectly normal. No pain or other subjective sensation attended the process. None of the diseases which frequently accompany disease of the nails, such as psoriasis, eczema, pityriasis rubra, were present.

Thyroid Extract in Psoriasis.

H. S. Purdon (*Dublin Journal of the Medical Sciences*, November 2, 1896) is of the opinion that we know little regarding the cause of psoriasis, but believes that it is intimately connected with a gouty or "rheumatic-gouty" state of the constitution. He has observed good results from dieting, and is convinced that in most cases the less "butcher's" meat is eaten the better. A vegetarian diet in some cases gives good results. With regard to the use of thyroid extract, a fair trial was given in six cases, in only one of which was it successful in curing the disease.

Dr. Purdon obtained expressions of opinion concerning its worth in this disease from P. Abraham, Allan Jamieson, McCall Anderson, Leslie Phillips, Stewart Stirling, Alexander Morton, Stopford Taylor, Walter G. Smith, Wallace Beatty, and R. G. Patteson (all well-known dermatologists), none of whom regarded the drug with favor. [Other observers, however, have had good results from this drug in psoriasis.]

CORRESPONDENCE.

Formaldehyde.

Editors of University Medical Magazine.

Dear Sirs: Please allow me to make correction of an error in my recent article upon "Formaldehyde" in your columns. The quotation as to the price of formalin was taken from Merck & Co.'s last market report. I have received a letter from Schering & Glatz, stating that the old price of formalin, as given in their price-list of 1896, was seventy-five cents per pound, including the bottle; and that they have since reduced the price further, so that formalin can be purchased at retail in five-pound bottles, including the bottle, at sixty cents a pound.

Yours truly,

H. C. Wood.

June 16, 1897.

BOOK NOTICES.

A System of Practical Medicine. By American Authors. Edited by Alfred Lee Loomis, M.D., Late Professor of Pathology and Practical Medicine in the New York University, and William Gilman Thompson, M.D., Professor of Materia Medica, Therapeutics, and Clinical Medicine in the New York University. To be completed in four imperial octavo volumes, containing from 900 to 1000 pages each, fully illustrated in colors and in black. Volume I. Infectious Diseases. Philadelphia and New York: Lea Brothers & Co., 1897.

This volume opens with a chapter on malaria, by William M. Welch and William S. Thayer. The definition, synonyms, history, and parasitology are contributed by Dr. Welch.

A short chapter on dengue is contributed by Dr. Hamilton A. West.

The chapter on enteric or typhoid fever has been written by Dr. James C. Wilson, who has been a frequent contributor on this common and therefore always interesting subject. Dr. Wilson's well-known estimate of the value of the Brand treatment remains unchanged. That there are objections to the method he admits, but, he says, "they are without weight as objections to a method of treatment which diminishes the sufferings of the individual and reduces the general mortality at least one-half." The details of the Brand treatment are given in full. The administration of medicines should be restricted to meeting positive indications.

Typhus fever is well described by Dr. Alvah H. Doty. This is now, fortunately, a rare disease. The author recommends cold baths and cold sponging as most generally useful for securing reduction of the temperature. A very noticeable feature of the present time is the tendency to restrict the use of drugs as much as possible. Quinine, the author says, may be employed as an antipyretic when the temperature is high and the bath is contraindicated; he adds, "it is at least a safe remedy," which is not a very strong recommendation. In both of the last two articles the use of the new chemical antipyretics is strongly condemned.

Dr. Warren Coleman has contributed the chapter on relapsing fever.

The contribution on yellow fever is from the pen of Dr. George M. Sternberg, and is in every way "up to date." Again one notes that symptomatic treatment is recommended. The use of the cold bath is not advised, although tepid or cold sponging may be employed.

Dr. John M. Byron has given a very good description of cholera. His experience in two recent epidemics is in evidence in the accurate description and practical handling of the subject. The author says

he has obtained "the most encouraging results from the use of hypodermoclysis and enteroclysis."

The subject of dysentery has been presented in an exhaustive and most satisfactory manner by Dr. Hamilton A. West.

The plague is described by Dr. William M. Welch.

The description of influenza, by Dr. James C. Wilson, is accurate and authoritative. Epidemic cerebro-spinal meningitis is described by Dr. Thomas S. Latimer.

Erysipelas is well presented by Dr. George Dock. The chapters on pyemia and septicemia are contributed by Dr. I. E. Atkinson. The subjects of small-pox and varioloid, vaccinia and varicella have been contributed by Dr. William M. Welch, whose very large experience with this class of diseases enables him to speak with unusual authority. Dr. P. Gervais Robinson has given a good description of scarlet fever. Many readers will doubtless be somewhat surprised to find the statement that the author administers potassium iodide and bichloride of mercury as a routine in this disease. Dr. J. P. Crozer Griffith is the author of the chapters on rubeola, rubella, pertussis, and epidemic parotitis The subject of diphtheria is very satisfactorily described by Dr. William Hallock Park. The antitoxine treatment is recommended. Intubation is described and illustrated.

Dr. William Osler has contributed an excellent chapter on tuberculosis. The disease is described as it affects the various organs and tissues of the body. The subject of syphilis is so uniformly treated of in works on surgery that it might with propriety be omitted from a work on medicine proper. Perhaps, however, there is no better reason than custom for this classification, and there is a chapter on this disease by Dr. W. F. Robinson. Dr. Isodore Dyer has written upon leprosy, Dr. James Stewart on tetanus, and Dr. Walter B. James on infectious fevers of obscure nature. The latter includes Weil's disease, Malta fever, miliary fever, and simple continued fever.

Such, in brief, is the outline of the contents of the first volume. Extended discussion of the different sections is quite unnecessary. The names of the various contributors are well known in medical literature, and are a guarantee of the latest and best teachings on the respective subjects. The effort of the editors to produce a thoroughly practical work has been successful. The physician will find, in most instances, minute details in regard to diagnosis and treatment. Purely theoretic considerations have largely been omitted, while such useful details as the technique of the examination of the blood in cases of malaria, the detection of the tubercle bacillus in sputum and in tissues, etc., have been given prominence.

While the authors (we note with deep regret that Dr. Loomis did not live to see completed the work he so ably outlined) are thus to be congratulated upon the excellence of this volume, from the medical stand-point, the publishers deserve equal credit for the high order of its mechanical execution. There are a number of illustrations, some of which are in colors. The index is very comprehensive.

A Text-Book of Histology. Descriptive and Practical, for the Use of Students. By Arthur Clarkson, M.B., C.M. Philadelphia: W. B. Saunders.

This is a profusely illustrated manual for students. It contains minute and elaborate descriptions of the fundamental methods of histological work in connection with the various tissues, which are in turn elucidated and illustrated. As a whole the book is very good, with the one fault that we believe it a mistake to include so much of elementary matter and not more of the refined special histology. The sections upon the blood, the thyroid and adrenal bodies, and the nervous system are disappointing, the more recent knowledge of these structures being very inadequately treated, valuable methods, as those of Ehrlich and Nissl, for example, being ignored. The illustrations, while plainly diagrammatical, are very commendable, and the plan of the work a natural and advantageous one for the student.

A Text-Book of Materia Medica, Therapeutics, and Pharmacology. By George Frank Butler, Ph.G., M.D., Professor of Materia Medica and Clinical Medicine, College of Physicians and Surgeons, Chicago. Philadelphia: W. B. Saunders.

This work is avowedly written for the student of medicine. It contains accordingly much of pharmacological matter and detailed information anent the art of prescribing, all of which is excellent in substance and arrangement. It contains comparatively little of the physiological actions of drugs, which we believe to be the foundation of the student's study of therapeutics. Several items in this department of the book cannot be passed over without comment. We do not believe there is sufficient empirical or experimental evidence to warrant the separate classifications of cardiac stimulants and cardiac tonics. Another very doubtful class is that of lithontriptics. We are glad to see it stated that calomel does not increase the biliary secretion, and that it is an active diuretic, but regret that the active properties as biliary stimulants of urea and the salicylates have not been mentioned, and that to the salicylates and the alkalies respectively are incorrectly attributed the power of increasing and decreasing the elimination of uric acid. Dosages, incompatibilities, and poisons are carefully considered. The book will prove of practical assistance to students, but is not destined to ground them in the fundaments of therapeutics.

ROYAL COLLEGE OF SURGEONS OF ENGLAND
20 SEP 97

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MEDICAL MAGAZINE.

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INTRAOCULAR ENCHONDROMA SPRINGING FROM THE CHOROID.[1]

By Edward Jackson, A.M., M.D.,

Philadelphia,

Professor of Diseases of the Eye in the Philadelphia Polyclinic; Surgeon to Wills Eye Hospital.

Mrs. G., aged 57, consulted me at Denver, January, 1896. Nine months before that the lids of the left eye had become swollen, and she discovered that she could not see with it. At first she was still able to recognize movements of the hand in the temporal portion of the field of vision, but in a few weeks all perception of light was lost. She had commenced wearing glasses for near work nine years before; and her eyes had always been well and strong, so far as she knew, until the preceding April. She had suffered no acute disease of any kind; was subject at times to a hard cough (bronchitis), but had nothing of the kind at the time her eye became affected. Up to last April she had no difficulty in threading a needle, but great difficulty since that time, although her glasses are suited to the good eye, which has normal vision. She cannot close either eye alone (winking test). The swelling of the lids subsided in two or three weeks; but they have again become swollen, with pain and inflammation of the eye for the last two months. She was seen last April, and subsequently, by Dr. C. J. Scott, who found the retina generally detached, with retinal hemorrhages, increased tension of the eyeball, and vision gone. The tension has been rather high ever since.

Present Condition.—The lids are thickened, palpebral fissure narrowed, and lid margins red. The palpebral conjunctiva is thickened, and there is conjunctival and subconjunctival thickening on the eye-

[1] Read before the American Ophthalmological Society, May 5, 1897.

ball, with slight pericorneal redness. The cornea shows a few specks of opacity near its lower margin. These are superficial. Otherwise the cornea is clear. Tension of the globe + T. 1. This did not vary materially during the four days the eye was under observation before removal. The iris is slightly muddy and thickened. The pupil is entirely fixed, and the lower margin adherent to the lens capsule, with loops of vessels passing from it onto the anterior capsule of the lens, and extending to almost the centre of the pupil. The lens is slightly hazy, showing the lens sectors. The iris does not bulge at any point. The anterior chamber is of good depth considering the patient's age. The vitreous is very hazy, with floating shreds of opacity, and more fluid than normal.

The above is all that could be made out by the ordinary ophthalmoscopic illumination. But on examination with the ophthalmoscope, using direct sunlight reflected by a nine-inch mirror, held two or three inches in front of the eye, with a strong convex lens back of the mirror, it is clearly seen that the retina is detached, and through it can be made out the outline of a large new growth situated below and to the nasal side. Under good illumination there were noticed a few pearl-like masses, one millimetre or a little more in diameter, in the subconjunctival and scleral tissue, which looked like inflammatory lymph masses.

The eye had now been painful and had troubled her greatly for some months, with constant, increased intraocular tension. The diagnosis given was tumor (probably sarcoma) of the choroid, and enucleation was advised.

January 31 enucleation was performed at St. Luke's Hospital, Denver, with removal of about eight centimetres of the optic nerve. No evidence of perforation of the sclera or involvement of the nerve by the growth was discovered. There was considerable bleeding which was checked by pressure, and caused extensive ecchymosis in the lids, which extended to the right upper lid, and on the left side the discoloration down to the angle of the jaw. The socket healed normally, and has been well ever since. The patient's health continues good.

On opening the eyeball, hardened in formalin, the tumor was found involving the inner posterior one-third of the globe, extending from the ora serrata on the inner side to about six millimetres beyond the macula, and vertically from slightly to the inner side of the upper end of the vertical diameter of the globe to about five millimetres to the temporal side of the same diameter below. At its anterior margin it was abruptly limited by the ora serrata. Posteriorly and outward it was bounded by a gradual transition into normal fundus. The mass of the tumor was entirely free from vessels, quite translucent, and gray in color, with but a little more tinge of yellow or brown than is now

shown in the part of the specimen exhibited. Posteriorly it was more opaque and contained some vessels.

On section it is found to consist of a hyaline, slightly granular, cartilaginous mass, containing small cavities, with rounded masses that look like nests of cells in hyaline cartilage, but which contain no nuclear elements. The whole mass stains very imperfectly with either carmine or logwood. The mass lies back of the degenerated retina and in front of the choroid, and seems to be connected with the latter.

The following report of the microscopical examination is made by Dr. Florence Mayo, of Philadelphia, who prepared the sections shown under the microscope. It agrees substantially with the observations of Dr. E. R. Axtell, of Denver, who also examined a portion of the growth.

"The specimen was the lower half of the eyeball, which had been hardened in formalin solution.

"*Macroscopically.*—Globe of normal size. Cornea, iris, and lens normal in appearance. Optic nerve of normal size. About one millimetre to the left of the entrance of the optic nerve and just below its level appears a growth which has a broad (three millimetres) but thin attachment to the posterior wall of the globe. This growth, triangular in shape, extends forward and down into the vitreous, causing complete detachment of the retina on that side. The growth has no connection with the inferior wall of the globe, but is broadest at that point (seven millimetres).

"Horizontal sections of the globe were made. When the knife reached the growth it buckled, and as it passed through the growth the same sensation was produced as when imperfectly decalcified bone is cut. Thin perfect sections of the growth were hard to make, owing to its great brittleness.

"*Microscopically.*—The sclera is normal. The papilla is swollen, and is infiltrated with small round cells. Extending from the choroid at the left of the nerve-head is a broad band of fibrous tissue, loosely arranged, with large interstices containing red blood-corpuscles, near the choroid. But gradually becoming more compact, and finally losing its fibrous structure, it appears finely granular, almost hyaline. Embedded in this granular matrix are numerous cells of varying sizes arranged in rows, also in clusters. The nuclei of these cells are not visible. There are no blood-vessels. The growth is evidently cartilage whose matrix has become somewhat calcified without forming bone."

The following features of the case seem worthy of special attention: (1) The history of the rapid onset of difficulty in seeing, suggestive of loss of binocular vision, and the complete inability to close the

blind eye without closing the other, point towards the recent loss of useful sight in the affected eye. This would probably indicate merely the recent extension of the growth into the region of the macula.

(2) The clear history of the whole group of symptoms belonging to the second or irritative stage of an intraocular new growth was striking; and when seen these symptoms were well marked. This seems opposed to the idea of any mere degenerative change in normal structures.

(3) The case illustrates the value of ophthalmoscopic examinations by direct sunlight, a method I have resorted to in other cases of blind or almost blind eyes without injury to the eye, and with decided gain in added knowledge of the case.

In so far as I have been able to examine the literature of intraocular tumors, no similar case has been recorded. Ossification of the choroid is common, but almost invariably follows grave intraocular disease. And in this case there was no formation of bone, although there was a slight deposit of calcareous matter in the matrix of the cartilage. A case of ossification of the choroid, resembling my case in some respects, is reported by Laquer in the *Archives of Ophthalmology* for 1877–78, Vol. VI, p. 284. The patient was a man aged 36 years, who presented himself with a small shrunken cataract that had recently become dislocated into the anterior chamber, and was causing trouble. The lens was extracted, and immediately the cornea collapsed and became wrinkled, and it resumed its normal shape quite slowly. The extraction wound, however, healed well and promptly. But there was no sight, and the ophthalmoscopic examination revealed nothing resembling the optic disk, the retina, or the retinal or choroidal vessels. The fundus appeared as a light, concave surface, with points of cholesterine reflex. Palpation now showed the entire posterior segment of the eyeball to be firm and resisting bone, although the anterior segment presented tension below normal. The border of the deposit was sharply felt above, just back of the ciliary region. The sight had been lost sixteen years before without any assignable cause, and there had been no considerable inflammation of the eye until the lens became dislocated into the anterior chamber.

It will not be forgotten in this connection that enchondroma is sometimes closely associated with sarcoma and cancer.

ON THE ESTIMATION OF HYDROCHLORIC ACID IN GASTRIC CONTENTS.

(From the Pepper Laboratory of Clinical Medicine, No. 7.)

By David Linn Edsall, M.D.,

Associate in Clinical Medicine.

The logical outcome of von Leube's use of the stomach-tube for diagnostic purposes has been a continuous endeavor to provide methods for the examination of the gastric contents that will be as far as possible exact in their results, and sufficiently quickly carried out and easy of application for the practitioner, who has little time at his disposal and little skill in scientific investigation, to be able to apply them to his clinical work and obtain results that may be depended upon. Especially has this been the case with chemical investigations. And of the constituents of the stomach contents hydrochloric acid at once suggested itself as the one most open to investigation, both from the importance of its presence in sufficient amount and from the greater readiness of its accurate estimation. The disturbing presence of organic acids and their compounds, and of inorganic salts, soon made evident, however, that an apparently simple question was one that could be solved only by methods which eliminated these factors, and this has led to a wealth of means by which it is sought to obtain precise results. These necessarily require, for the greater part, familiarity with chemistry and the investigations connected therewith, and, often a greater obstacle, the more or less elaborate apparatus brought into play. Of the proposed methods of determining the entire amount of hydrochloric acid found free and combined with organic bodies that of Braun[1] would seem most nearly to meet the needs of the clinician. This loses exactness, unfortunately, from the presence of acid phosphates which are partly reckoned with the hydrochloric acid and in the incineration losses are apt to occur.

A greater degree of precision is reached by using Martius's and Lüttke's[2] method, and when the little time that this requires can be given to the determination, it certainly gives the most reliable results possible with limited time and skill. But even this method can scarcely be carried through in much less than an hour when one is familiar with its details, and when unused to work of this kind much more time will be required.

The time required by the more precise methods leaves us, in the

many cases in which they cannot be carried out, under the necessity of contenting ourselves with either the simple determination of the presence or absence of the free hydrochloric acid or its quantitative determination by some ready method, and for this purpose we have until recently had at our disposal only Leo's[3] procedure, which determines the whole amount of hydrochloric acid, and the methods of Mintz,[4] Lüttke,[5] Mörner,[6] and Boas[7] for the determination of the amount of free hydrochloric acid. Of these Mintz's method alone does not include the organic acids that may be present, and consists, in the presence of free hydrochloric acid, in titrating ten cubic centimetres of gastric contents with one-tenth normal sodium hydrate until Günzberg's reagent ceases to give a reaction. From the number of cubic centimetres of one-tenth normal sodium hydrate one at once gets the amount of free hydrochloric acid in terms of sodium hydrate. Lüttke uses tropäolin OO as an indicator, and reckons the hydrochloric acid from the number of cubic centimetres one-tenth normal sodium hydrate used, when the reaction ceases, while Mörner and Boas use congo red, —Mörner congo-paper and Boas congo in solution. Leo's method consists in adding calcium carbonate in excess to the filtrated contents, the calcium uniting with the free and organically combined hydrochloric acid to form calcium chloride, filtering, passing a current of air through the fluid to drive off the carbon dioxide (which can readily be done with a bulb-syringe). The acidity of the fluid is then due to the acid salts, and subtracting this from the total acidity previously determined, one gets the quantity of hydrochloric acid in terms of sodium hydrate,—in the absence of organic acids.

Of these Boas's method is much the quickest, that of Mörner requiring time in the constant testing with congo-paper, and Mintz's still more in the heating of each test; and this is scarcely lessened by Rosenheim's[8] suggestion of the use of phloroglucin-vanillin paper or Fleiner's,[9] of adding the reagent to the filtrate before titrating, while Leo's requires some time in filtration and dividing off the carbon dioxide.

It has, however, been objected to Boas's method (Lüttke[10]) that the precipitate of congo blue forming in an acid medium requires an excess of the alkali to redissolve it, and that the color-change is not distinct.

I, however, use constantly a slight modification of this method, and with useful results. The objection of Lüttke that the congo blue requires an excess of alkali for its solution is certainly true when used in larger amounts, as advised by Boas, but if only a drop of the congo solution be used this is not appreciable. This I have tested by titrating newly prepared one-tenth normal hydrochloric acid and sodium hydrate solutions against each other, finding a given quantity of the one

exactly neutralized the same quantity of the other, and that they were, therefore, of exact strength. I now added to ten cubic centimetres of the one-tenth normal hydrochloric acid one drop of congo solution. Titrating this with the one-tenth normal sodium hydrate, I found that when, under constant stirring, the last trace of the blue precipitate had disappeared, and the solution had become a clear red, I had used exactly ten cubic centimetres of the soda solution. Repetition of this gave the same results, and twenty cubic centimetres of a one-twentieth normal hydrochloric acid and thirty cubic centimetres of a one-thirtieth normal hydrochloric acid likewise required just ten cubic centimetres of one-tenth normal sodium hydrate to entirely dissolve the precipitate. I therefore use the final disappearance of precipitate itself as an indicator, though a little familiarity with the reaction makes the color-change quite as good, as at the time of solution of the last trace of the precipitate there is a sudden and distinct, though slight, clearing up and brightening of the now red fluid, whether it be watery, gastric contents or of albuminous bodies artificially prepared.

To these methods Toepfer[11] added not long since what was to be an exceedingly simple means of estimating with sufficient accuracy the free hydrochloric acid, that loosely combined with albuminous bodies and the acidity due to other factors. This was to be accomplished by the use of two indicators, new in gastric work,—dimethyl-amidoazo-benzol and alizarin. The first was to indicate the free acid, being sensitive in color-change to free acid only, while the second was sensitive in color-change to all factors but the loosely combined hydrochloric acid. Hence by titration with dimethyl-amidoazo-benzol we could find the amount of free hydrochloric acid, by titration with phenolphthalein the total acidity, and by titration with alizarin another value, which, subtracted from the total acidity, would give the acidity due to the hydrochloric acid combined with the albuminous bodies,—the first and the last together being the acidity due to the total active hydrochloric acid secreted. The recognition of the end reaction with alizarin was admittedly difficult until accustomed to it, while any difficulty of this sort with dimethyl-amidoazo-benzol was not considered. I have, however, found this a most serious objection. Adding three to four drops of the indicator, as advised by Toepfer, to even a watery solution of acids and titrating with sodium hydrate solution through the color-changes from red to orange and finally to the end reaction,—a clear lemon-yellow,—I found the instant of the appearance of the pure yellow was exceedingly hard to recognize. I therefore added but one drop of the indicator, thinking to make the reaction more striking by lessening the intensity of the resulting yellow color. This I found very satisfactory in watery solutions, and next used it in acid solutions of albu-

minous bodies and in stomach contents. I found, however, that the opalescence that albuminous bodies lend to a solution interfered with the recognition of the slight color-changes here to such an extent as to render the results very inaccurate. And that this is not due to any individual dulness of color sense is shown by the fact that two other associates of the Pepper Laboratory, who are constantly using color reactions and who tested the indicator in their work, had the same results. I am bound, therefore, to disagree with Mohr,[12] Simon,[13] and Friedenwald,[14] who have approved of the method, and with Einhorn,[15] who considers dimethyl-amidoazo-benzol a useful indicator for free acids, and to assent to Strauss'[16] view that the change from red to yellow is difficult to recognize and requires considerable practice, and that the recognition of the point of final change depends largely upon the color sense of the individual using it. And to this I would further add the conviction that this varies in the same individual when working with solutions of different physical characters and that such an indicator is entirely unreliable. And further examination has but added to this conviction. To this purpose I have first tested its delicacy in simple watery solutions, both in the form of the solution of the indicator and of filter-paper soaked in this solution. Both were prepared fresh and their delicacy at the same time compared with congo solution and congo-paper, with Günzberg's[17] phloroglucin-vanillin and with Boas's[18] resorcin solution. The latter, consisting of resorcin 5 parts, saccharum album 3 parts, and dilute alcohol 100 parts, seems to have received but little attention, especially in this country, while I have felt confident, since using it frequently, that it is a valuable test, since I have never but once succeeded in obtaining a reaction with phloroglucin-vanillin when resorcin failed to show reaction, and in that one case the response with the Günzberg reagent was so slight as to be doubtful.

An accurately prepared one-tenth normal hydrochloric-acid solution was used for testing. As this contained 3.65 parts in 1000, it was approximately and more simply expressed, 1 in 275. In testing Toepfer's reagent I added to five cubic centimetres of the solution one drop of the reagent, the congo solution was tested in the same way, while for the other tests I used a small loop of platinum wire catching a film of the solution in this, and, with the papers, dropping this on them, and when the reaction grew faint, comparing this with the same amount of distilled water, while with Boas's and Günzberg's reagents the film of solution was dropped on a porcelain dish, a drop of the reagent added, and heated as usual.

The platinum öse was first advised by Ewald for use in Mintz's estimation of the amount of free hydrochloric acid in order that the

amount abstracted from the fluid might not influence the result. I have used it in order that I might have an approximately equal amount of the solution in each test with Günzberg's and Boas's reagents, and especially that the amount be, as far as possible, small, in order that in the gentle heating any appreciable amount of water should not evaporate, and thus give a stronger hydrochloric-acid solution; that this is of influence will be later considered. The results of the tests are shown in the table.

TABLE I.

Hydrochloric Acid Solution.	Dimethyl-amidoazo-benzol.	Dimethyl-amidoazo-benzol Paper.	Congo Solution.	Congo Paper.	Phloroglucin-Vanillin.	Resorcin.
1–10 normal, *i.e.*, 1–275.	Strong red.	Red.	Blue.	Blue.	Deep red.	Rose-red.
1–10 dilution, *i.e.*, 1–2750.	"	"	"	"	Red.	Deep pink.
1–5500.	"	Orange.	"	"	Red; less intense.	Lighter pink.
1–11,000.	"	None.	"	Less intense.	Purple-red.	Slight.
1–33,000.	Paler red.	. . . .	"	Blue ring.	1–15,000 very slight; beyond this none.	1-about 13,000 very faint pink; beyond this none.
1–50,000.	Orange red.	. . . .	Blue, with violet tinge.	Slight darkening.		
1–100,000.	Orange.	. . . .	Violet.	o		
1–150,000.	Slight orange tint.	. . . .	Reddish-violet.			
1–200,000.	Yellow.	. . . .	Slight violet tinge.			
1–250,000.	. . . .	. . . .	A faint violet tinge still, with turbidity; beyond this clear, pure red.			

I have therefore determined that, used in the same way, congo solution is somewhat more delicate than dimethyl-amidoazo-benzol, while both are far more delicate than any of the other reagents, and that while congo-paper loses its distinctive action beyond the dilution of 1 to 33,000, resorcin and Günzberg's reagents are much lower and about equal in delicacy, the latter standing a little more dilution, while the dimethyl-amidoazo-benzol paper is the lowest of the group. The difference in comparative delicacy of the congo solution and dimethyl-amidoazo-benzol when likened to the results obtained by Strauss,[19] who found Toepfer's reagent a little more delicate than congo, is ex-

plained by the difference in the manner of using the congo. He brought a drop of the solution tested in contact with a drop of congo and noted the reaction at the line of contact.[1] The diversity of the results obtained by von Hässlin,[20] Leo,[21] Krukenberg,[22] Tschlenoff,[23] and Strauss[24] in their tests of congo paper, and which are variously accepted by Ewald,[25] Boas,[26] Lüttke,[27] and Riegel,[28] is explained by the difference in delicacy of the preparations. My own results are somewhat higher, which is due to my use of a paper prepared from a strong solution of congo; and that they were exact is evidenced by the same result in this as well as all the other tests in their repetition. The value obtained for phloroglucin-vanillin is in consonance with Günzberg and the other observers named, while the same is true of resorcin. (*Vide* Boas,[29] Martin.[30]) I can, however, agree with Mintz[31] that, as ordinarily used, the Günzberg reagent is more delicate than any of these figures show. Tested, as in the ordinary way, with filtrate of gastric contents,—*i.e.*, with three to four drops of the hydrochloric-acid solution,—I have with three separate tests gotten a still distinct reaction with a hydrochloric-acid solution of 1 to 40,000, and the same is true to a slightly lesser degree of resorcin as it reacts at 1 to 30,000. This difference in the two methods of testing seems due to the early concentration of the hydrochloric-acid solution by the evaporation of water.

The dimethyl-amidoazo-benzol paper, while less delicate than the other reagents, is still sufficiently delicate for use, and the reaction is decidedly easier to recognize than that of the reagent in solution. The paper would, therefore, seem more useful than the solution. This is, however, negatived by the following experiment. To learn the behavior of these reagents in the presence of albuminous bodies I took two grammes dried egg albumin and 100 cubic centimetres distilled water and, to aid in the solution of the albumin, two grammes sodium sulphate. To a portion of this I added one-tenth normal hydrochloric acid in excess, and determined the free acidity by my own method of using congo red. The free acidity remained the same after standing half a day so that I could be sure none of the free hydrochloric acid combined with albumin during my tests. A fresh solution as described above was then prepared, hydrochloric acid added, and the free acid in ten cubic centimetres was found to require 3.2 one-tenth normal sodium hydrate for neutralization. The free hydrochloric acid was therefore present in the proportion of 1 to about 900 (1 to 880). The tests were then carried through in the same way with this solution. The results were as follows:

TABLE II.

Solution: Albumin, 2; Na_2So_4, 2; Aq. dest., 100.	Dimethyl-amidoazo-benzol.	Dimethyl-amidoazo-benzol Paper.	Congo.	Congo Paper.	Phloroglucin-Vanillin.	Resorcin.
Free HCl, 1–900.	Deep red.	Red.	Blue.	Blue.	Red.	Rose-red.
Diluted one-half — free HCl, 1–1800.	"	Doubtful, and beyond this no reaction.	"	"	"	Rose-red.
Diluted to one-tenth — free HCl, 1–9000.	Orange-red.	. . . .	"	"	Very slight; all strengths below this showed no reaction.	None; 1–6000 gave slight reaction still.
1–18,000.	Deep orange.	. . . .	"	Violet-blue.		
1–36,000.	Pale orange.	. . . .	"	Distinct but slight darkening; beyond this none.		
1–54,000.	Still a tinge of red.	. . . .	Violet tinge.			
1–81,000.	Clear yellow.	. . . .	About same.			
1–100,000.	. . . .	. . . .	Distinctly violet.			
1–150,000.	. . . .	. . . .	Muddy violet-red.			
1–175,000.	. . . .	. . . .	Pure red.			

The same tests were carried out with a solution of peptone, two grammes, in water 100 cubic centimetres, with added one-tenth normal hydrochloric acid. The results with this were in most details about the same, only the resorcin fell off a little, giving a slight reaction at 1 to 5000, and none beyond this. These tests were, however, not exact as to the utmost delicacy of the reagents, as the solutions had before the addition of the hydrochloric acid an acidity of 0.3 cubic centimetre, one-tenth normal sodium hydrate to ten cubic centimetres of the solution. The values as to delicacy for hydrochloric acid would, therefore, be a little too low for each of them.

I have, hence, taken stomach contents from a case of moderate hyperacidity in which there was no evidence of formation of organic acids. The contents were removed one hour after an Ewald meal. There was no reaction to Uffelmann's test for lactic acid, and the distillate had no acidity. The free acidity of the contents, which was four in ten cubic centimetres of contents, was therefore due to hydrochloric acid. Free hydrochloric acid was then present in the proportion of 1 to 1000. The results with this gave about the same figures for Toepfer's

reagent,—the reaction was present as a light orange at 1 to 50,000, while at 1 to 75,000 it was no longer present. Phloroglucin-vanillin, as was to be anticipated, gave a somewhat higher figure, the reaction being present at 1 to 10,000, and not beyond this, while resorcin gave a perhaps somewhat stronger reaction at 1 to 6000 than with the dilutions of the artificial mixtures, and was not present above this. Congo paper gave its final reaction at 1 to 50,000, and this was but a slight darkening of the paper as compared with a spot moistened with water. Congo solution at 1 to 200,000 still gave a muddy violet tinge to the solution.

The dilution of the albumin has become so great by this time that these results cannot give the exact delicacy of the reagents for free hydrochloric acid in the usual strength of solution of albumin, peptones, etc. They do, however, indicate that the presence of these bodies lessens the delicacy of congo slightly, of congo paper but little if at all. Dimethyl-amidoazo-benzol is unfavorably influenced, though it remains very delicate, while the paper made from it is so unfavorably influenced that it loses its value entirely for stomach contents. Phloroglucin-vanillin reacts only in a somewhat stronger solution when albumin or peptone is present, contrary to the results of Ewald's[32] and Haas's[33] tests, which were less exact. But both this reagent and resorcin, which fall off considerably in the mixtures, give their reactions in so much more dilute solutions when the solutions are, as is customary, used in larger quantities, that their usefulness in ordinary gastric work is not impaired.

Finally, then, as regards solutions containing hydrochloric acid, albumin, and peptones, in stomach contents or artificial mixtures, the most delicate reagent is congo solution, but congo paper is preferable because of its sufficient delicacy and greater convenience. Toepfer's reagent is but little more delicate than the congo paper, is less convenient as a qualitative test, and the reaction, in dilute solution, is more difficult to recognize. The paper made from this reagent is useless, phloroglucin-vanillin is somewhat more delicate than resorcin, but either is of sufficient delicacy. The use of resorcin requires greater care, however, in the heating. It requires a higher temperature to bring out the reaction than with phloroglucin-vanillin, while it takes less heat to destroy the reaction than with Günzberg's reagent. On the other hand, it has the advantage that it keeps for months at least without protection from light and without losing in delicacy, and that it is very easily procured. The last two reagents require no testing of their delicacy with organic acids, as, in consonance with others, I have found that they give no reaction in any strength used up to 1 per cent. The others I have, however, tested, as follows, with 1 per cent. lactic and acetic acids and dilutions of these.

TABLE III.

Lactic Acid.	Dimethyl-amidoazo-benzol.	Dimethyl-amidoazo-benzol Paper.	Congo Solution.	Congo Paper.
1–100.	Deep red.	Deep red.	Blue.	Blue.
1–1000.	Red.	Distinct red.	Deep blue-violet.	Blue-violet.
1–5000.	Red orange.	None.	Blue-violet.	More violet.
1–10,000.	Deep orange.	. . . . .	The reaction up to 1–50,000 became increasingly a redder violet; 1–75,000 a little violet tinge still, and at 1–100,000 pure red.	Violet.
1–20,000.	Orange.	. . . . .	. . . . .	Violet ring.
1–30,000.	Pale orange.	. . . . .	. . . . .	Doubtful.
1–40,000.	Tinge of orange.			
1–50,000.	Plain yellow.			

Acetic Acid.	Dimethyl-amidoazo-benzol.	Dimethyl-amidoazo-benzol Paper.	Congo Solution.	Congo Paper.
1–100.	Marked.	Marked.	Marked.	Marked.
1–500.	Marked.	Slight.	Marked.	Marked.
1–1000.	Red orange.	None.	Deep bluish-violet.	Blue-violet.
1–5000.	Orange, tinge of red.	. . . . .	Not tested beyond this.	Violet.
1–10,000.	Orange.	. . . . .	. . . . .	Violet.
1–20,000.	Pale orange.	. . . . .	. . . . .	Violet ring.
1–30,000.	None.	. . . . .	. . . . .	Violet ring.
1–40,000.	. . . . .	. . . . .	. . . . .	None.

Further, the tests were carried out with the same 2-per-cent. solution of egg albumin with added one-tenth normal lactic acid. The free acidity, as determined before, was thirty-one, or about 1 to 280 of lactic acid. The results of the tests were as follows:

TABLE IV.

Solution containing Free Lactic.	Dimethyl-amidoazo-benzol.	Congo Solution.	Congo Paper.
1–280.	Deep red orange.	Blue.	Blue.
1–2800.	Red orange.	Blue-violet.	Violet.
1–8400.	Medium orange.	. . . . .	Violet.
1–14,000.	Paler orange.	Reaction has slightly redder tinge.	Distinct ring.
1–28,000.	Slight orange tinge.	A violet tinge persisted up to 1–84,000; above this clear red.	A faint but not distinct color change.
1–42,000.	Yellow.		

Therefore, contrary to Mohr and Toepfer, I have found, with Einhorn and Strauss, that dimethyl-amidoazo-benzol responds in

much weaker solutions of lactic acid than 0.5 per cent., and that Toepfer's belief that the presence of albumin, peptones, etc., even in minute quantities, prevent reaction with this strength of lactic acid is not well founded is evidenced by the last table. This has emphasized my conviction that dimethyl-amidoazo-benzol adds in no valuable way to our methods for determination of free hydrochloric acid. The inexactness of results, owing to the difficulty of determining the end reaction, and especially of determining the reaction in solutions of different character, is further increased by the fact that it reacts to lactic and other organic acids, even in small quantities, much smaller than those in which they often occur in gastric contents. It therefore has no advantages over congo red when organic acids are present, but has distinct disadvantages in the first instance, since the reaction with congo is so readily recognized.

Since the above was written, Hàri[34] has advocated the reagent anew with new directions for its use and with comparison of his results with Sjoqvist's and Braun's methods. In order to recognize the reaction readily he advises the use of but five cubic centimetres of the gastric filtrate, to use but one drop of the reagent, to use only sunlight and that reflected from white paper on the burette-stand as well as certain other careful directions. This minute advice but shows the difficulty in recognizing the color-change, and following it does not materially aid one. In my work I had used all these devices without being able to convince myself of the usefulness of the reagent. And I cannot give assent to his statement and Mohr's that the end reaction must be recognized at the point where the pure carmine red color gives place to the orange. The determination of this point is not in any way easier than that where the color becomes a pure lemon yellow. And the reason for the use of that point is based only upon the fact that dilute solutions of organic acids give colors between this and yellow, and that, hence, titration to the point where the color becomes pure yellow gives too high values for hydrochloric acid by including the value of the organic acids. Very dilute solutions of hydrochloric acid certainly give no red color, but do give reactions between pure red and pure yellow, which water alone will not give. If, therefore, we stop before reaching a pure yellow we get too small a value for hydrochloric acid. In other words, the dilute solutions of hydrochloric acid give the same coloration as stronger solutions of organic acids, and we cannot tell where a reaction for hydrochloric acid ends and one for organic acids begins, and we are forced to titrate until all color that may be due to hydrochloric acid has disappeared, or we should get too low values. And Hàri's work, based upon this use of the reagent, gives constantly results approaching those attained by

Sjoqvist's method, which is usually recognized as giving too small values, while his failure to obtain any value for combined hydrochloric acid by Braun's method in many cases where free hydrochloric acid was absent is rather explained by his use, in the same manner, of dimethyl-amidoazo-benzol as the indicator in the final titration than by the entirely theoretical assumption that the neutral phosphates were present in each case in sufficient or more than sufficient quantity to require all the hydrochloric acid that should appear as free hydrochloric acid in the final titration for their ultimate conversion into acid phosphates.[2]

We are therefore in the same position as before Toepfer's publication of his method. While we have still no ready and accurate means of determining the total amount of hydrochloric acid, we are by no means unable to quickly ascertain the most important points in the chemistry of gastric contents. For clinical purposes a sufficient investigation is as follows:

(1) Determine the presence or absence of free hydrochloric acid. The phloroglucin-vanillin test is best because of its slightly greater delicacy and readiness, but if not at hand and especially for those who find it difficult to procure it the resorcin test suffices.

(2) Test for lactic acid with Uffelmann's reagent.[3]

(3) Determine the total acidity with one-tenth normal sodium hydrate, using phenolphthalein as the indicator.

(4) Titrate with one-tenth normal sodium hydrate, using one drop of congo solution as an indicator, and thus determine the free acidity. If (2) is negative, this can be attributed to hydrochloric acid. If (2) is positive, use Mintz's method for determining free hydrochloric acid, and subtracting this from the result obtained by congo, we have the acidity due to organic acids. If (1) has been negative, the free acidity determined by congo is the acidity of the organic acids. And in this case the insufficiency of hydrochloric acid can be determined by Honigmann and von Noorden's[35] method,—*i.e.*, titrating with one-tenth normal hydrochloric acid until free hydrochloric acid is found present. For clinical purposes this suffices, but no examination can be considered complete, even for clinical diagnostic purposes alone, without the estimation of the amount of free hydrochloric acid present. The qualitative tests give to an experienced eye a certain indefinite indication of the amount present, but this can only be so far of worth that we learn from them that there is a distinct deficit of hydrochloric acid, or that it is present in large amount; and particularly in hyperacidity are they not to be depended upon, for a slight hyperacidity will give the same full intensity of color as one of marked degree. When we have, however, learned how much free hydrochloric acid is actually

present, we have at the same time determined the existence of subacidity or hyperacidity, as the case may be, and its degree, or we have, on the other hand, found positively that the hydrochloric acid production is normal.

In those cases where free hydrochloric acid is absent the method of Honigmann and von Noorden tells us, after all, what is most important,—that is, not how much hydrochloric acid the stomach has secreted, but how far behind the required presence of free hydrochloric acid it is in its work.

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[1] In comparing the delicacy of the two reagents it has seemed to me most useful to use each in the same way; hence I have added the congo directly to the solution tested.

[2] Hàri's argument depends on the following: Taking the potassium phosphates as examples of the phosphates found in gastric contents, they will in the presence of free HCl exist as KH_2PO_4.

Adding one-tenth normal KOH, the reaction with them is as follows: $KH_2PO_4 + 2KOH = K_3PO_4 + 2H_2O$.

When the one-tenth normal HCl is added after incineration, we have $K_3PO_4 + 2HCl = 2KCl + H_2KPO_4$.

Hence there are equivalent amounts of KOH and HCl combined in the two reactions.

When, however, there is no free HCl, some monohydrogen phosphates will be found (K_2HPO_4).

The reactions here are: $K_2HPO_4 + KOH = K_3PO_4 + H_2O$ and $K_3PO_4 + 2HCl = H_2KPO_4 + 2KCl$, resulting in a loss of HCl in the final result.

[3] Always, when practicable, using the ether extract from the gastric contents.

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HEREDITARY LATERAL SCLEROSIS.[1]

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M. G., a widow, 59 years old, applied at the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases, in the clinical service of Dr. S. Weir Mitchell, on January 15, 1897, complaining of twitching of the legs, both subjective and objective, that had been noticed for a period of ten years. Similar muscular manifestations had gradually extended to all parts of the body, including the head. The twitching was said to be worse during rest, and especially at night, and it was believed to persist during sleep, which was disturbed thereby, so that the patient was compelled to arise and walk about. On account of this annoyance she had not gone to bed at all for six weeks, simply reclining upon a sofa at night. There had never been a convulsion or loss of consciousness or any paralysis. The appetite was good, the tongue coated, the bowels constipated. From time to time hemorrhage took place from the bowels, probably in consequence of a hemorrhoidal condition. There was neither nausea nor vomiting, and no loss of flesh, no chill, fever, or sweating. There was

[1] Read before the Section of Neurology of the American Medical Association, June, 1897.

headache every morning, lasting from twelve to twenty-four hours, and susceptible of relief by bromides. There was subjective vertigo. The prominent symptoms in the case were uninfluenced by heat, cold, dryness, or moisture. Gait and station were steady and exhibited no abnormality. The knee-jerks were exaggerated. When the patellar tendon was struck, in addition to the active extension of the leg, the thigh became flexed and the patient jumped visibly. Ankle-clonus was present on the right, but could not be elicited on the left. Co-ordination was good in the upper extremities and the reflexes were normal. There was no tremor of the extended hands and fingers. Sensibility was preserved. The pupils were equal and regular and reacted sluggishly to light. There was no nystagmus.

Examination of the ocular apparatus, by Dr. A. G. Thomson, yielded the following findings: V.= R. $\frac{20}{100}$; L. $\frac{3}{200}$. The pupils reacted normally both to light and in accommodation. *O. D.* The media were clear, the disk a trifle gray. The fundus was normal. *O. S.* Disk and fundus were normal. There was high myopia, and a macula was present on the cornea, resulting from measles in childhood and impairing vision. The fields of vision for both form and color were normal. The muscular balance was well maintained.

The patient exhibited and was conscious of a general restlessness, to secure relief from which she sometimes tapped her foot, sometimes rocked from side to side, sometimes rotated her head. The action of the heart was rhythmic, its sounds clear. There was no difficulty in speech and none in swallowing. The complexion was muddy and the patient stated that she had been pale as long as she could remember. There was no spinal tenderness and no evidence of spinal deformity. There was no difficulty in micturition and the action of the sphincters was unimpaired. The blood was found to contain a full complement of red corpuscles, although the hemoglobin-valuation was only 50 per cent. There was no consanguinity between the patient and her husband. Her mother had suffered a good deal from headache, and a brother's son had been melancholy. There had been no difficulty in birth and no traumatism; and there was no history indicative of spinal meningitis or of syphilis.

A hesitant diagnosis of incipient lateral sclerosis was made in this case and the possible dependence of the lesion upon the state of the blood taken into consideration. When, however, the patient, a few weeks later, brought her son, and he too was found to be suffering from similar symptoms, the conclusion could hardly be avoided that we had here to deal with a mild degree of lateral sclerosis in parent and in child, and I am inclined to believe the disease to be hereditary, or at least familial. It is noteworthy that both patients exhibit manifest

pallor, and this fact suggests the possibility of a common etiology, either the blood-state acting as a cause of the spinal degeneration or with this representing the common effect of some undetermined cause. Against this hypothesis is the fact that the spinal lesions of the profound anemias are situated by preference in the posterior columns, while in both of the cases here reported there is no evidence of posterior-column disease.

M. G. (a son of the patient whose case has just been reported), 18 years old, employed as a machinist, was born at term, without complication or instrumental aid. He had a convulsion at the age of three months, while nursing at the breast, during the period of dentition. He learned to walk and to speak readily and early. At the age of eleven months he suffered from the presence of spool-worms in the intestine, associated with attacks of crying and throwing back of the head. He had measles at the age of two years, and fever and ague at the age of eleven. On September 24, 1896, the patient was operated on for appendicitis successfully. He had for two months previously suffered from pain in the left lumbar region, and this had persisted. His habits were good. He was a total abstainer from alcohol and from tobacco; he used no tea and but very little coffee. Four years before coming under observation he had been struck with a fist in the temporal region, losing consciousness temporarily, although only ringing in the ears followed for a few days. There was no history of masturbation or of venereal disease. The patient had complained of a sense of lightness in the head from childhood. On sudden change of position a mist would come before the eyes and quickly pass away. For a period of six months he had noticed that frequently there would occur an involuntary twitching of the left leg. He had never fallen or lost consciousness. He complained of a feeling of nervousness and often had a sense of trembling; at times he actually shivered. The appetite was good; at times pain followed the act of eating, together with acid eructations. The bowels were naturally constipated, but they were kept free by cod-liver oil, which the patient was taking as a nutrient. He had lost a considerable amount of flesh in the six months preceding the time he came under observation. About once a week he suffered from headache, lasting for two or three hours at a time, and being relieved by the use of bromides. He slept well, although he talked in his sleep and was at times restless. He had been pallid for five or six months. Gait and station were steady. The knee-jerks were deliberate, large, and exaggerated. Front-tap contraction could be elicited in the left leg; ankle-clonus also was present on the left; it was less distinct upon the right, unless the tendo Achillis was struck when the foot was flexed

upon the leg. By this means ankle-clonus could be very readily induced on both sides. The induction of these reflexes was followed by fine tremor, especially marked in the thighs. When the partially flexed foot was tapped on the plantar aspect the foot was extended. The reflexes in the upper extremities and also the chin-jerk were active. The pupils were equal, regular, and reactive to light. There was no nystagmus. General sensibility was preserved. The cremasteric, abdominal, and epigastric reflexes were preserved. The action of the heart was rhythmic, its sounds clear. No physical abnormality could be detected in the situation of the abdominal uneasiness of which the patient complained. There was no spinal tenderness and none over the kidneys. It was further learned that for several years, until a bougie had been passed, there had been difficulty in the expulsion of urine, but there had never been any evidence of the presence of a urinary concretion. There was no difficulty in swallowing and no affection of speech. Dr. A. G. Thomson found no change in the fundus of either eye.

From a consideration of the symptomatology, and especially of the physical phenomena, of the foregoing two cases the conviction can scarcely be escaped that the clinical manifestations depend upon sclerosis of the pyramidal fibres of the spinal cord. I prefer to speak of the probable pathologic process rather than employ the clinical designation spastic paraplegia or spinal spastic paralysis, inasmuch as the motor disability is as yet inconsiderable. Whether this process be primary or secondary I will not assume to state positively; but there is no tangible evidence of any antecedent condition upon which it could be held to be dependent, and in the absence of this I am disposed to view the pyramidal sclerosis as primary. A review of the literature upon the subject of spastic paraplegia does not entirely resolve the doubt as to the uncomplicated occurrence of primary lateral sclerosis, although the evidence, so far as it goes, tends to support such a possibility. In a fatal case of spastic paraplegia, reported by Strümpell (*Archiv für Psychiatrie*, Band x, 1880, p. 711), occurring in a man whose older brother presented like symptoms, together with others of multiple sclerosis, post-mortem examination disclosed symmetrically distributed primary sclerosis of the pyramidal tracts, most marked in the lumbar region, gradually diminishing in an upward direction, and not extending beyond the decussation in the medulla; together with sclerosis of the cerebellar tracts and the postero-internal columns of Goll (Strümpell, *Archiv für Psychiatrie*, Band xvii, 1886, p. 217). In other cases of combined system-disease of the spinal cord Strümpell (*Archiv für Psychiatrie*, Band xi, 1881, p. 27) found also primary degeneration of the pyramidal tracts. Minkowski (*Deutsches Archiv für*

klinische Medicin, Band xxxiv, 1884, p. 433) has reported the case of a syphilitic woman, dead of pulmonary tuberculosis, in which, after death, sclerosis of the lateral pyramidal tracts and of the cerebellar tracts only was found. Déjerine and Sottas (*Archives de Physiologie normale et pathologique*, 1896, p. 630) have also reported a case of slowly developing spastic paraplegia, progressing for twelve years and then becoming stationary, in which, after death from pneumonia, there was found isolated and systematic sclerosis of the pyramidal fibres of the spinal cord and slight sclerosis of the columns of Goll, with integrity of the brain, the meninges, the spinal nerve-roots, and the spinal gray matter. Upon *a priori* grounds there is no obvious reason why primary sclerosis of the pyramidal tracts should not take place; and if, as seems probable, we may look upon locomotor ataxia as essentially dependent upon disease of the centripetal neuron we may equally look upon spastic paraplegia as dependent upon disease of the centrifugal neuron.

The more interesting feature of our cases, however, is their occurrence in parent and child. We have much to learn concerning the hereditary and familial distribution of disease, and especially of diseases of the nervous system; but in the absence of definite knowledge upon the subject we may conceive of the existence of some developmental defect resulting either in gross structural abnormality, or in those undiscernible alterations in texture so delicate as to elude the most rigid physical scrutiny, yet capable of manifesting themselves in aberrant function, or finally in an undue vulnerability to morbific influences. A very considerable number of cases of spastic paraplegia of familial distribution have now been reported, but in many of these there have been present also symptoms of disease of other parts than the pyramidal fibres. Among the earliest are four cases reported by Seeligmüller (*Deutsche medicinische Wochenschrift*, 1876, Nos. 16, 17) and occurring in children the mothers of whose parents (cousins) were sisters. Three other children in the family were healthy. In two of the affected children there was, in addition to the spastic manifestations, also muscular atrophy, and in two there was impaired mobility of lips, palate, and tongue, with defect of speech. Somewhat later Dreschfeld (*Medical Times and Gazette*, February 9, 1878, p. 140) reported two cases of disseminated sclerosis in brothers 8 years and 9 months and 7 years and 4 months old respectively, presenting spastic phenomena. In one of these there had been convulsions in infancy.

In reporting a group of cases illustrative of the pathology of the spinal cord Strümpell (*Archiv für Psychiatrie*, Band x, 1880, p. 711) includes the two cases already referred to, occurring in brothers, which he considered clinically instances of spastic paralysis, although he

appreciated that in the one, in which there was a history of convulsions in infancy, there were present also symptoms of multiple sclerosis.

Bloch (*Archiv für Psychiatrie*, Band XII, Heft 2, 1881, p. 470), in relating the history of a family presenting peculiarities in the knee-jerk, in connection with a neuropathic diathesis, refers to two brothers, 19 years and 17 years and 6 months old respectively, who exhibited manifestations of lateral sclerosis.

Pelizæus (*Archiv für Psychiatrie*, Band XVI, 1885, p. 698) has reported five cases in members of one family, although not of one generation, presenting symptoms of spastic paralysis, in conjunction with cerebral symptoms, which he attributes to multiple sclerosis.

Philip (*Brain*, VIII, 1886, p. 520) has reported a family of nine children, in which the father presented symptoms of gradually advancing spastic paralysis, the youngest son early symptoms of the same order, and three other sons symptoms of pseudo-hypertrophic muscular paralysis.

Schultze (*Deutsche medicinische Wochenschrift*, April 11, 1889, p. 287) reports three cases, in two sisters and one brother, presenting spastic manifestations in the lower extremities, in both girls associated with strabismus, and in one of them also with increased size of the head. The first child in the family, which was healthy, had been born without complication, while the subsequent labors were slow and difficult.

Gee (*St. Bartholomew's Hospital Reports*, 1889, Vol. XXV) has reported a father and a son and daughter who presented symptoms of spastic paraplegia, associated in father and son with wasting of muscles of the hands.

Latimer (*Transactions of the American Pediatric Society*, Vol. I, 1890, p. 195) has reported two cases of spastic paraplegia in brother and sister, aged 20 and 18 years respectively, in the former of whom also speech was slow and thick, and there was occasionally involuntary discharge of urine and feces. There had, however, been no difficulty in birth, no convulsions, and no antecedent disease. The father was a chronic alcoholic.

Bernhardt (*Archiv für pathologische Anatomie und Physiologie und für innere Medicin*, Band CXXXVI, 1891, p. 59) has reported the case of a man, 46 years old, who presented symptoms of spastic paralysis, together with others indicative of involvement also of the pons and medulla, all being suggestive of multiple sclerosis, and three of whose brothers and also a sister presented similar symptoms.

Tooth (*St. Bartholomew's Hospital Reports*, Vol. XXVII, 1891, p. 7) reports four cases of what he believed to be sclerosis of the crossed pyramidal tracts, occurring in two brothers in different families, and

presenting symptoms of spastic paraplegia, in two associated with stammering speech.

Krafft-Ebing (*Wiener klinische Wochenschrift*, 1892, No. 47, p. 681) reports three cases of spastic paraplegia in a sister and two brothers, which he thinks may be due to congenital hydromyelus.

Freud (*Neurologisches Centralblatt*, XII, Jahrg. 1893, p. 512) reports two brothers with spastic extremities, nystagmus, optic atrophy, convergent strabismus, and bradylalia, believed to be due to cerebral diplegia.

Strümpell (*Deutsche Zeitschrift für Nervenheilkunde*, Band IV, 1893, p. 172) cites the case of a man, presenting symptoms of spastic spinal paralysis, whose grandfather had for a long time suffered from "paralysis of the legs," and whose brother and father and two of the latter's brothers had a peculiar gait like the patient's. Of this disorder, which Strümpell designates the hereditary form of spastic paralysis, he considers the characteristics its occurrence only in males and its familial or hereditary distribution. The first symptoms appear at the age of 25 or 30, and consist in an alteration of the gait due to muscular rigidity, without weakness, and which increases until the gait is spastic. The disorder progresses slowly, and only the lower extremities are involved.

Newmark (*American Journal of the Medical Sciences*, 1893, Vol. CV, p. 432) reports the case of sister and brother, 15 and 5 years old respectively, born without difficulty, who presented symptoms of spastic paraplegia, and whose mother and a sister exhibited increased reflexes. In a sister of the mother also the reflexes were exaggerated, and of her eight children the first was dead after delivery; the second was born after a difficult labor, had convulsions, and presented symptoms of bilateral spastic hemiplegia; the third labor was difficult; the fourth labor also was difficult, and the child exhibited increased reflexes; the fifth, sixth, and seventh labors were difficult, the last child dying after birth, and the other two presenting exaggerated reflexes. Newmark reports another family, of eleven children, of which four boys and a girl exhibited spastic symptoms, and two other girls and a boy increased reflexes. One of the boys and one of the girls presenting spastic manifestations had been delivered with forceps; and in the birth of one of the girls with increased reflexes, who died from "water on the brain," labor had lasted two days and nights, although delivery was non-instrumental. Newmark (*Medical News*, January 16, 1897) reports two additional cases of spastic paraplegia occurring in sisters, 6 and 4 years old respectively, in the birth of the older of whom forceps had been used. In both articulation was indistinct. Forceps had also been employed in the delivery of an older sister still, who, however, exhibited no spastic phenomena.

Souques (*Revue neurologique*, Tome III, 1895, p. 1) has reported two cases of spastic paraplegia in brother and sister, 10 and 7 years old respectively, born at term without complication, whose mother exhibited increased reflexes. He contends that clinical and anatomic considerations warrant the recognition of a disorder characterized clinically by spastic paraplegia and anatomically by primary system-sclerosis of the pyramidal fibres, either isolated or combined with degeneration of the columns of Goll. The ultimate cause still eludes detection. It may be toxic or infectious, perhaps syphilitic.

Erb (*Deutsche Zeitschrift für Nervenheilkunde*, Band VI, 1895, p. 137) reports two cases of spastic spinal paralysis in sisters, 12 and 6 years old respectively, in whose family history consanguinity was a prominent feature.

Jendrassik (*Deutsches Archiv für klinische Medicin*, Band LVIII, Hefte 2, 3, p. 137) has reported three families, in one of which a boy of 8 years presented symptoms of spastic paralysis, while the mother had an awkward gait from childhood, and a sister of 5 years had increased reflexes; in another family a girl of 8 and a boy of 12 years exhibited symptoms of spastic paralysis; in the third family two sisters, 18 and 10 years old respectively, exhibited symptoms of spastic paralysis. In four of these cases there was advanced optic atrophy.

Ganghofner (*Zeitschrift für Heilkunde*, Band XVII, 1896, p. 303) has reported, among a series of cases of cerebral spastic paralysis, a brother and a sister presenting difficulty in walking, with weakness and trembling in the legs, scanning speech, ataxia of the upper extremities, increased knee-jerks and ankle-clonus, and in one also with strabismus.

Raymond and Souques (*Semaine Médicale*, 1896, p. 315) have reported the occurrence of progressive spastic paraplegia in two sisters, 19 and 15 years old respectively, both born at term, without difficulty. One brother and the paternal grandfather were chronic alcoholics.

Higier (*Deutsche Zeitschrift für Nervenheilkunde*, Band IX, 1896, Hefte 1, 2) reports four sisters, 24, 20, 18, and 17 years old respectively, who presented spastic manifestations, with tremor of the hands, dysphagia, bradylalia, strabismus, nystagmus, optic atrophy, defective intelligence, and muscular atrophy. The parents were cousins and the births had been normal. In all a diagnosis of cerebral spastic diplegia, with degeneration of the ganglion-cells of the anterior horns of the spinal cord, was made. Higier cites further two cases, in brothers, reported by Pribram (*Neurologisches Centralblatt*, 1895), and presenting symptoms of neural atrophy of peroneal type, in conjunction with those of cerebral diplegia. He also refers to a report by Melotti and Cantalemessa (*Revue neurologique*, 1896) of the occurrence of familial

spastic paraplegia in two brothers and one sister, of whom a grandmother also was supposed to have suffered from the same disease. There had been no difficulty in birth. Finally, Higier cites the report by Koshewnikoff (*Meditzinskoje Obozrenije*,1895) of progressive spastic-paretic symptoms in two children in the same family attributed to cerebral diplegia.

Hochhaus (*Deutsche Zeitschrift für Nervenheilkunde*, Band IX, 1897, p. 291) has reported three cases of spastic spinal paralysis in a sister and two brothers 21, 13, and 8 years old respectively, all born at term without difficulty. He attributes the symptoms to disease of the lower segment of the pyramidal tracts, resulting from a congenital defect in development.

Of the cases here cited it must be evident that the lesions are not alike in all, as the clinical manifestations are not alike in all. In some there would appear to be cerebral lesions, either developmental or acquired, intrauterine, parturient, or postnatal. Even developmental defects must eventually be referred to some ultimate cause, as it is difficult to conceive of their spontaneous origin. Once established, however, they may be perpetuated by hereditary transmission. In cases of congenital spastic paralysis of cerebral origin, in which a history of difficult or protracted or complicated labor cannot be elicited, it is possible that the fetus may have been subjected to traumatism or have suffered from disease *in utero*. Ganghofner (*Zeitschrift für Heilkunde*, Band XVII, 1896, p. 303) attaches much importance to the influence of hereditary syphilis as an etiologic factor. Whilst the fetus is ordinarily well protected from physical injury, it may be that occasionally, from causes that escape scrutiny, this protection may be inadequate. Further, while dystocia may not be sufficient to delay labor notably, it may yet be sufficient to result in injury to the yielding and resilient calvarium of the fetus and its semifluid contents. The conditions favoring lesions of the cerebro-spinal axis of the fetus, either during the continuance of pregnancy or at parturition, once established, it is not surprising that occasionally more than one child in the same family should suffer from this cause.

In some of the cases it is probable that disseminated sclerosis or multiple lesions of other sort existed,—in some amyotrophic lateral sclerosis; while in a small number the symptoms of degeneration of the pyramidal tracts alone were present.

While existing evidence points to the possibility of primary lateral sclerosis, it is not so conclusive with regard to the isolated occurrence of this lesion, although the clinical testimony rather justifies its recognition. The explanation of the occasional familial distribution of the various disorders that have been under consideration in this

communication must be sought in those indeterminate influences included in the term heredity, and it may be that these will be found to depend upon variations in cellular nutrition.

As an illustration of the familial distribution of cerebral spastic paralysis I shall detail a brief account of a family that came under my observation several years ago. Of nine children (six males and three females) of healthy parents three (two males and one female) presented classic symptoms of cerebral spastic paralysis. One (a male) had had a convulsion at the age of 14 months, but was in good health at the time of observation. Two (females) had died in infancy during dentition. Three (females) were quite well. There was no history of any difficulty in birth. One of the affected children had had an acute illness during childhood, following which speech was lost for several days and spastic symptoms appearing shortly afterwards. All three had suffered from measles at one time. No other etiologic influence could be determined.

OBSERVATIONS ON THE USE OF DIPHTHERIA ANTITOXIN, WITH SPECIAL REFERENCE TO ITS USE IN MALIGNANT CASES.[1]

By Alexander McAlister, M.D.,

Camden, N. J.

In bringing this subject before you, it is my purpose to confine myself to those features of the disease which demonstrate the *rationale* of the serum treatment, as now recommended by all leading clinicians.

The development of the bacillus of Löffler in a susceptible individual constitutes diphtheria in its primary form. The seat of development, a local lesion, is usually the mucous surface of the respiratory tract, but may be any mucous surface or flesh wound of the body. The medium of infection is atmospheric air, and the portions of the body most exposed are the tonsils, because of their structure, function, and situation. It is important in this connection to recall the anatomy of the tonsils. They are racemose glands, covered with reduplications of the oral mucous membrane. Their inner surface presents from twelve to fifteen orifices, leading into small recesses, from which numerous follicles branch out into the substance of the gland. The orifices, recesses, and follicles are lined with a continuation of the pharyngeal mucous membrane. The viscid secretions which serve

[1] Read before the American Medical Association, June 4, 1897.

as a lubricant invite to the folds of the tonsils the diphtheria bacillus; when once within these folds, in a susceptible person, they not only rapidly develop, but in so doing produce toxins of most astounding virulence. In their development, *per se*, they constitute the local lesion of diphtheria; as their toxic products are absorbed and carried by the circulation to every part of the system they produce, indirectly, the constitutional lesion of diphtheria. The pseudo-membrane is always present and more or less extensive, but this does not constitute the essential lesion. The latter is the acute degenerative cell-change particularly affecting the mucous membrane underlying the local lesion, but showing a marked predilection for the cardiac muscles, the kidneys, the peripheral nervous system, and the lymphatic glands. In necropsies of malignant cases this cell-destruction is shown in extensive localized necrosis in these organs.

Diphtheria is a self-limited disease which tends towards a fatal issue. For reasons which are not now fully understood, the rapidity with which symptoms appear and the membrane spreads or the course of the disease is run after infection varies considerably in different persons. Next to the importance of an early diagnosis stands the question of malignancy. Formerly a malignant case of diphtheria was one that terminated fatally, but with the advent of our present superior methods of the serum treatment many cases once properly so classed recover. Malignancy now refers to the severity of a case rather than to its termination, depending upon the seat and extent of the pseudo-membrane, and the virulence of the infection.

While the former may be ascertained by inspection, we have as yet no means of knowing the latter in advance of its dire effects. The virulency of diphtheria toxins is nowhere more forcefully demonstrated than in a case of the disease in which a comparatively small number of bacilli, situated in a mere speck of pseudo-membrane, produce a high degree of toxemia almost from the first. In such cases the bacilli of the infection are especially virulent, and determine the malignancy of the resulting disease. In cases attended by extensive formation of the pseudo-membrane the malignancy of the disease is due to the rapidity of absorption of toxins from the local lesion or to the mechanical impediment they cause to the respiratory function. The rapidity of absorption, on the other hand, depends upon the particular understructure of the affected membrane. In laryngeal diphtheria the pseudo-membrane is often quite extensive, yet because of the underlying membrane it is not so tough as elsewhere, and the absorption of toxins and the resulting toxemia do not form an element of danger. On the other hand, because of the structure of the larynx and trachea and their abundant nerve-supply the immediate danger is from sten-

osis, spasm, cyanosis, and asphyxia. Such cases show comparatively little toxemia, and are generally not followed by the usual sequelæ. Glandular enlargement, albuminuria, and sthenic symptoms are wanting, and in necropsies of cases that die early localized areas of parenchymatous degeneration in the heart and kidneys are not observed.

The opposite, however, is true where the local lesion is situated upon the pharyngeal mucous membrane. Here the resisting basement membrane is displaced by glandular structure, vascular sinuses, erectile tissues, and the like, and absorption takes place very rapidly. A fibrous net-work is situated around and among the above structures, and connects the mucous membrane to the periosteum. The glands are composed of tortuous tubules with many sinuses and oblong offshoots, all favoring rapid absorption. This applies especially to the rhino-pharynx and nares, where the hypersecretion, which attends all acute inflammations of these parts, makes the field all the more favorable to the thrifty development of the bacillus of Löffler. Vascular engorgement and accumulation of nasal secretions alike facilitate, the one in the formation of a specially dense membrane and the other in making the colony of bacilli specially thrifty. Such cases run a comparatively short, acute course, and if they do not terminate fatally are followed by a train of sequelæ, and attended by complications.

Barring any immediate danger from asphyxia, which is now readily met by intubation, the highest consideration in the question of treatment should always be the nature and degrees of toxemia present. The danger now confronting the serum treatment of diphtheria, greater than any other, is that it is applied generally upon an empirical basis. To obviate this it is of importance that the question of malignancy and the degree of toxemia of each case be carefully studied. A scientific remedy requires to be employed scientifically. In a certain sense each case is a law unto itself. It is not sufficient to say that antitoxin must be administered during the first two, three, or four days of the disease. It is possible that any case may speedily change in type and prove fatal within twenty-four hours. At times a case will run this short course where the pseudo-membrane has the most innocent appearance and occupies only one or two recesses of a tonsil. If the infection could be early recognized and treated in its incipiency, nothing in the remedial art would be easier than the cure of every case of diphtheria with one moderate dose of antitoxin. But cases must be treated as they are found, and, alas, many are not found until the disease has made serious inroads by damaging vital organs or arousing latent disease.

"The prognosis of any case of diphtheria is always doubtful, since the mildest case may become severe, and the severe may improve. The

prognosis is especially grave among children, and in proportion to their youth; sucklings, however, are rarely affected. The progress is more severe among patients debilitated by previous disease or faulty hygienic surroundings. The outlook in the individual is worse as the disease becomes septic or gangrenous, since mixed infection there exists." (Wood and Fitz, "Practice of Medicine," 1897, p. 172.)

In my own practice I have found it advantageous to distinguish between early and late cases in the question of dosage and supplementary treatment. This is not based upon an estimate of the hours or days the disease has probably continued, but upon the progress it has made. Though somewhat arbitrary, it seems to me the best classification that can be made for the purpose. A thorough clinical examination of the patient will generally suffice to determine to which class a particular case belongs.

Early cases will require only the initial dose of antitoxin,—1000 units. The disease is promptly arrested and its natural course cut short. In such cases the patient is generally found quite well upon the third or fourth day, and no sequelæ or complications will be observed. The conditions found are as nearly those of experimental diphtheria as is possible in clinical practice, and accordingly the full specific powers of the remedy are obtained. In a series of early cases the physician's work becomes a matter of simple routine. He administers the requisite dose of antitoxin, orders a mild aperient, and directs that the nose and throat be kept clean with a mild antiseptic or alkaline. Other remedies are not needed, and frequently it is difficult to keep the little patient in bed. If one will review his work as compared with his experience in the disease before the introduction of antitoxin, the physician is tempted to pronounce such cases of mild type, and probably to conclude that many of the cases would have recovered without specific treatment. Bearing in mind, however, the gravity of any diphtheritic infection and the natural tendency of the disease, it is safe to declare that, of a given number of cases treated with antitoxin early, less than 1 per cent. would have terminated in complete recovery within four days, if treated otherwise; while according to the best pre-antitoxin statistics between 25 and 30 per cent. would have died. On the other hand, the 70 to 75 per cent. that would have recovered would have run courses ranging from ten days to three weeks, and been attended by both sequelæ and complications. This applies to all cases treated early, whether the type of the disease is pharyngeal or laryngeal. Cases treated early with antitoxin are universally mild, because treated early; and remain mild because treated scientifically and specifically.

Late cases usually require more than one dose of antitoxin. The

conditions to be met are graver and less easily appreciated than in early cases. In addition to the primary lesion there is the secondary or constitutional lesion. The pathologic condition from being purely local has become widely disseminated throughout many and important organs of the body. The toxins absorbed from the pseudo-membrane have caused the essential lesion of the disease, or scattered centres of cell-necrosis. From these centres arise a new element of danger. The way in which this is caused is clearly indicated in the following from Louis Fisher:

"If large quantities of this so-called membrane-toxin are absorbed into the system through neglected or delayed treatment, these toxins transform the albuminoid bodies of the tissues and cause tissue-poisons or tissue-toxins. These tissue-toxins can be classed as (1) those that belong to digested proteids; (2) those that are proteid substances. The first is an albumose; the second is an organic acid. Albumoses have a specific action on the human organism; when present in small quantities they produce fever, and if allowed to act for any length of time they produce paralysis. In very large quantities they produce great exhaustion and also fatty degeneration of the heart and kidneys.

"It is in these cases that antitoxin at times fails, owing to the presence of poisons other than those peculiar to pseudo-membrane, and which are by-products of degenerative changes in the tissues."

In late cases, then, the condition is that of primary diphtheria, for which antitoxin is fully a specific, plus the damage already done and its grave constitutional results. The cases seen late are frequently of mixed infection, streptococci or other pathogenic organism having followed upon the diphtheritic infection.

The local lesion soon becomes gangrenous, and the constitutional condition that of approaching pyemia.

To this must be added in a certain percentage of cases the effects of pre-existing disease, either manifest or latent. While it is now largely conceded that antitoxin exerts specific power in neutralizing the membrane-toxins and arresting the primary infecting process, it is not known to have such action against the tissue-toxins, and certainly will not restore the integrity of damaged organs. In these cases the danger from the disease *per se* is not so great as that from the damage already sustained by vital organs. The former is much more promptly amenable to treatment than the latter.

In treatment every feature must be kept in view. As early as possible the primary infecting process must be removed. It is impossible to form an adequate estimate of the number of antitoxin units required to accomplish this. The symptoms—hyperemia, stupor,

coma—or certain physical signs—the appearance, condition, and extent of the pseudo-membrane, the rapidity of spread—may indicate a high degree of toxemia, and mark the case as one of great malignancy; but all these form no basis for estimation. The condition must be met by special dosage. In these severe cases give 2000 units of antitoxin, and repeat this dose in eight to ten hours, if the desired effects are not obtained. The full neutralizing effect of a dose of antitoxin is secured upon absorption of the serum, and within ten hours. To wait a longer time before repeating the dose is to expose the tissues of the body to further damage from the unneutralized toxins. Too much importance cannot be attached to the use of concentrated serum. The smaller bulk is more promptly absorbed, and results can be confidently expected in a much shorter time than when weak serums are employed.

When this rule is followed, I find comparatively few late cases require more than two doses. Late cases are always to be regarded as in imminent danger. And undue effort or excitement on the part of the patient may induce cardiac paralysis. The patient's strength must be husbanded by quiet, the recumbent posture, and nutritious food. To tax the heart as little as possible, I have the foot of the bed slightly elevated. To these measures must be added, in many cases, cardiac and general tonics and stimulants. Such cases always run a more prolonged course and are often attended by complications and sequelæ. Though the disease proper is cured by the entire removal of the primary infecting process, the damage already sustained is sufficient to carry the disease-process through a fixed course, with the above-named results.

Since introducing the serum treatment of diphtheria into my practice, in January, 1895, I have employed it in sixty cases, with a loss of five by death. In all these cases, excepting a few seen in consultation with other physicians, the diagnosis was confirmed by laboratory culture. They embrace all types and all degrees of malignancy, and include a number of cases seen quite late in the disease.

My earliest experience was with the French product; but since a most excellent antitoxin has been furnished by a reliable Philadelphia firm, I have used this exclusively. My first eighteen cases were treated in the West Jersey Orphanage, and all recovered. These have been under my observation ever since, and are in perfect health to this day. My results with the treatment have been entirely satisfactory in every particular, so that my former dread of meeting diphtheria cases has entirely left me. My only anxiety now is to see the cases reasonably early.

When I hear a physician question the value of antitoxin in the prevention and cure of diphtheria, or what is more, in the face of the

volume of testimonies now in its favor, openly oppose antitoxin, my conclusions are that he has never used it, nor seen it used; or, if the contrary is true, that a reliable product was not employed or was employed improperly. Antitoxin is not employed scientifically when the physician delays, to know first whether the patient will most likely die without it or have his diagnosis confirmed by a culture, before inaugurating the serum treatment; or when employed, is given in too small doses and at too long intervals.

PRIMARY SARCOMA OF THE PENIS.

By Charles H. Miner, M.D.,

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Through the kindness of Dr. Oscar H. Allis, senior attending surgeon to the Presbyterian Hospital, I have the opportunity of reporting a very rare case of primary melanotic sarcoma of the penis, for which he amputated that organ at the hospital in April, 1895. There are only ten cases of primary sarcoma of the penis reported in medical literature, and these will be used for comparison.

On the 27th of February, W. F., a man 55 years old, a saloonkeeper by occupation, was admitted to the Medical Wards of the Presbyterian Hospital.

His father, mother, and three sisters were dead; the causes of their deaths being unknown. One other sister died of dropsy. One brother died of pneumonia. One brother and one sister are still living and well. He had one child which died in infancy. His wife is living but has separated from him.

He had always enjoyed the best of health until ten years ago, when he had Bright's disease, with very extensive dropsy. He had used whiskey and beer to excess; also tobacco. He denies ever having had any venereal disease. On the glans penis there has been an indurated, discolored patch for about eight years, which the patient says was caused by a kick. During the past year it has ulcerated, becoming quite extensive and elevated. It has caused him no pain or inconvenience on urination.

For five or six months the patient has noticed an enlargement of the abdomen in the right upper quadrant and epigastrium, with pain upon pressure and on stooping over. In the last eight weeks he has had a general swelling of the abdomen, a dry, painful cough, headache,

constipation, and pain in the knees and ankles, with swelling of the left ankle.

His general appearance is that of a large-sized white man, 55 years old, and weighing about 200 pounds. The skin and mucous membranes are of a fair color. His hair is dark and the eyes are blue. The tongue is anemic, moist, tooth-marked, and lightly coated. The pupils are small and react to light and distance. The radial pulse is regular, small, weak, and easily obliterated by moderate pressure. The chest is large and the antero-posterior diameter somewhat increased. The costal angle is obtuse and expansion is limited. The percussion-note is good all over the chest anteriorly and posteriorly. Expiration is prolonged and somewhat harsh all over the chest, but more marked posteriorly. The apex-beat of the heart is not visible, but the sounds are heard best in the fifth interspace, midclavicular line. There is a systolic murmur at the apex, heard also in the axilla. Aortic and pulmonic second sounds are somewhat accentuated. There is a soft blowing systolic murmur heard over the pulmonic cartilage, which is also heard in the vessels of the neck. There is a marked pulsation in the vessels of the neck.

The abdomen is enlarged and the enlargement is more marked on the right side. The greatest circumference of the abdomen is forty-three inches, four inches above the umbilicus. In the right midclavicular line dulness extends for eight inches; in midsternal line for seven inches, and in left midclavicular line for eight inches perpendicularly. The highest level of dulness is from the fifth rib, on the right side, to the seventh costal cartilage in the midsternal line, and on the left side to the sixth rib. This area of dulness seems to connect with the splenic dulness, but is separated by an area of dull tympany. The abdomen on the right side is tympanic to the middle line. On the left side low-pitched tympany extends for five inches from the umbilicus, and below this there is dulness. Slight fluctation can be obtained on palpation. A hardened, somewhat nodular mass is felt in the epigastric and right hypochondriac regions. The mass is not movable, and is apparently an enlarged liver.

The patient suffers considerably at night from pain in the right flank and along the posterior part of the right leg down to the ankle. He passes about forty ounces of urine daily, which contains considerable albumin with mucus, pus, and blood, but no casts or sugar.

On examination, a large indurated swelling of the end of the penis was found. The prepuce could not be retracted and was apparently adherent. On one side there was a pigmented ulcerating patch about one inch in diameter with a foul discharge. One inch from and on the opposite side to the ulcer there was a fluctuating mass. The

patient suffers no pain from the growth and no inconvenience except for the fetid discharge. The testicles are not involved. There is no perceptible enlargement of the dorsal lymphatics of the penis, but the inguinal glands are slightly enlarged.

The patient became more comfortable under treatment and rest in bed, but strength and appetite did not improve. He was transferred to the Surgical Ward on the 28th of March. An incision was made through the foreskin from where the growth was ulcerating down to the fluctuating swelling, on the opposite side, from which half an ounce of fetid pus discharged. After the incision it was seen that the growth involved the entire glans and extended for half an inch above the corona. The skin was not adherent and the foreskin was easily retracted after the constriction was relieved. The growth measured six inches in circumference and resembled, as can be seen from the photograph, an epithelioma. It undoubtedly arose from and developed in the erectile tissues. The meatus urinarius could not be found in the tumor mass, and the urethral mucous membrane was not involved.

Amputation through the penis one and a half inches from the pubis was performed by Dr. Allis on the 30th. On account of the patient's general condition and the state of his urine it was deemed unsafe to administer ether. A small rubber drainage-tube was tied about the base of the organ to act as a tourniquet, and then twenty minims of a 4-per-cent. solution of cocaine was injected deeply and superficially into the penis above the tumor. The tumor was then removed and the operation completed, during which the patient could occasionally feel the contact of the instruments, but assured us that he suffered no pain. There was absolutely no shock from the operation and no bad symptoms following the use of the cocaine.

In five days the wound had healed and there was no difficulty on urination. A week later the patient developed severe pains in the back and abdomen with the symptoms of acute peritonitis, and died of exhaustion April 6, 1895. The notes made at the autopsy are as follows:

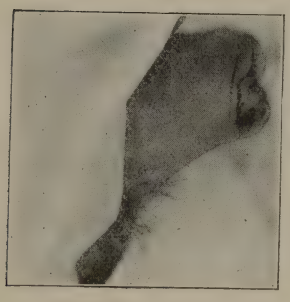
A short and heavily built man. Rigor mortis is not marked. The abdomen is distended and tense. The circumference of the abdomen four inches above the umbilicus is forty-two inches. The penis shows stump and scar of an amputation. On opening the abdomen the peritoneal cavity contains more than a quart of brownish-yellow, purulent-looking fluid. The transverse colon is distended. The omentum covers the liver.

The left pleural cavity contains a normal amount of serum. There are a few adhesions to the left lung near the apex. The right lung is everywhere bound down by firm adhesions. The pericardial cavity contains about two ounces of a straw-colored serum. The heart is

dilated and the walls are flabby. The right ventricle is distended with currant-jelly and chicken-fat clots. The valves on the right side are normal. The aortic valve is slightly thickened. The mitral orifice admits two fingers and the valve is thickened. The wall of the left ventricle is barely one cubic centimetre in thickness. The heart weighs 280 grammes. The aorta is dilated and the walls present atheromatous patches.

The left lung is crepitant, with some hypostatic congestion at the base. Scattered through it are three or four hard calcareous tubercles. It weighs 490 grammes. The adhesions on the right side are particularly dense over the diaphragm. The tissue of this lung is dense and not very crepitant. It weighs 470 grammes.

The liver is adherent to the diaphragm and weighs 7870 grammes; the greatest width is forty centimetres; the greatest diagonal forty-



Dr. Miner's case of primary sarcoma of the penis.

seven centimetres. The perpendicular of right lobe is thirty centimetres; the perpendicular of left lobe is twenty-eight centimetres. The under surface shows twenty nodules, varying in size from a walnut to a goose-egg. The nodules are soft, almost fluctuating, and contain a dark-brown, fluctuating substance. Around the nodules the liver substance is hard, yellow, and mottled with red spots. On section the liver mass is granular, yellow, hard, friable, and shows the same red mottling. The convex surface of the liver presents eighteen or more similar nodules and almost no normal substance. On section the interior of the liver is filled with black, jelly-like masses, of the same appearance and consistency as the tumors. The escaped, black, sticky fluid-material stains everything it touches. The liver is firmly adherent to the stomach by its left lobe. The omental fat is hard and granular. The spleen weighs 310 grammes, and is large, flabby, steel-gray in color.

It measures seventeen centimetres in length and ten centimetres in width. It is normal on section. The left kidney weighs 160 grammes and is pale and soft. On section it is somewhat granular and the cortex slightly increased in thickness. It contains one small cyst filled with brownish fluid. The right kidney weighs 180 grammes and is also soft and friable. The cortex on section is pale and somewhat diminished. The perirenal fat on both sides is excessive. The retroperitoneal and mesenteric glands are not enlarged. The pancreas is normal in appearance. The intestines are injected throughout, particularly in the lower part. The prostate is not enlarged. The glands of the groin are enlarged but not pigmented. There is no enlargement of the glands of the pelvis.

The brain weighs 1410 grammes. The dura is normal and non-adherent. The veins of the cortex are injected and distended. The brain substance on section is apparently normal. The left eyeball was removed and found to be normal. The microscopical examination showed the growth to be a melanotic spindle-celled sarcoma. This diagnosis was confirmed by Professor Guitéras, University of Pennsylvania, after a careful examination of stained preparations.

Kaufmann, in his article in Billroth's *Deutsche Chirurgie*, entitled "Verletzungen und Krankheiten der Männlicher Harnrohre und des Penis," has collected a series of eight cases of primary sarcoma of the penis, two have since been reported, and with this case there are in all only eleven cases for analysis.

The notes on the ten other cases are given here with few omissions, because of their great interest and the small number of complete histories available.

This is the first complete collection of such cases made in the English language.

The only report of a case of primary sarcoma of the penis ever made in this country was by Dr. W. G. Porter before the Philadelphia Pathological Society in 1880, and was also from the Presbyterian Hospital in Philadelphia. The patient, a colored man, 44 years of age, was admitted on the 25th of August, 1880, on account of a tumor, which he first noticed during the previous March, at the root of the penis, and the origin of which he ascribed to an injury received in lifting a heavy package. The growth rapidly increased in size until it was about the volume of a fetal head, and extended into the perineum. There was no evidence of fluctuation about it, and the tumor felt as hard as a fibroid. Neither testicle was implicated and there was no difficulty on urination. During the four weeks in which the man remained in the hospital the tumor increased very little in size, but his health and strength were much impaired. Dr. Porter performed excision on the 27th of Septem-

ber, the incision extending from the pubic symphysis over the tumor of the right side of the penis to the scrotum. A portion which was closely attached to the sheath of the penis, and at one point dipped down into the structure of the right cavernous body, was included in a ligature, and the rest of the mass, weighing one pound and a half, dissected out. There was little hemorrhage, and the man rallied well from the operation. Severe tympanites, however, set in the night after the operation, followed by great edema of the penis, and on third day by gangrene, death occurring on the 1st of October from exhaustion. Dr. Seiler had made sections of the tumor and had found it to consist of spindle- and round-celled sarcoma of the large variety, so that the growth should in his opinion be described as a large spindle-celled sarcoma. Dr. S. W. Gross said "he regarded the tumor a sarcoma; the operation plainly showed that it arose from the sheath of the right corpus cavernosum, which is continuous with the superficial perineal fascia."[1] Autopsy showed no evidence of peritonitis or cellulitis, though there was some very fetid gas in the peritoneum, but nothing except the local lesions already detailed to account for death. No metastases in other organs.

Dr. Gross also said that he had looked up the literature of the subject, and the only reference he could find to a similar growth was a case recorded in the *Charité Annales*[2] for 1878, by Kohler. He (Kohler) describes a round-celled sarcoma of the corpora cavernosa. The patient, 21 years old, previously healthy, had received nine years before a blow behind the scrotum. Four months previous he noticed near the back part of the scrotum a growth the size of a hazel-nut, which caused drawing pains, made urination difficult, and produced burning in the urethra. On examination the scrotum was divided into three parts, on both sides lay the normal testicles, the middle part was filled with a hard rough tumor the size of a child's head, covered by normal skin, not pitting on pressure, and slightly movable. The inguinal glands were enlarged. The excision of the tumor showed its origin to be without doubt the erectile bodies. The urethra was involved at one spot. The inguinal glands were removed. In two months a recurrence took place, on both sides as well as in the wound. Immediately multiple metastases appeared over the body, especially in the thorax. The patient complained of severe pains in the legs. Death soon followed from exhaustion. On section the prostate was found to be a sarcomatous mass. The bladder and rectum were intact. The tumors of the thorax had pressed through the ribs and caused a number of fractures. Large sarcomatous foci were found in the lungs and liver. On the outer surface of the skull, as well as on the inner, metastases were present. They were absent in the brain, but they occupied the

whole space of the spinal cord canal between the dura mater and the periosteum. The tumor showed itself under the microscope to be a round-celled sarcoma.

Marcus Beck[3] amputated for a tumor the penis of a man 65 years old. Twenty years before this he had discovered a growth on the foreskin, which slowly increased, and was removed nine years later by circumcision. In the scar of the operation the present tumor reappeared, which grew slowly at first, but in the last months grew rapidly to the size of a hen's egg. At the operation it involved the whole organ behind the glans. The skin was only adherent at one spot. The microscopical investigation showed a fibrosarcoma, which originated in the erectile bodies.

Klebs believed this tumor to be an undescribed fibrous growth of the foreskin, which later became sarcomatous and secondarily involved the corpora cavernosa.

Maurer[3] describes the following case as an angiosarcoma, or more accurately as an intravascular endothelioma of the erectile bodies.

A patient, 50 years old, came to Volkmann's clinic on the 30th of April, 1882. He said that he had been sick three months, and suffered especially from tumors in both groins, which had been incised(?) some time before. He knew nothing of an involvement of the penis, but investigation showed that it was swollen, in a condition of semi-erection, and of excessive denseness and hardness as if consisting of wood, although its form was in no way changed. Besides this, ulcers as large as a dollar were found in both groins with deep, partly gangrenous bases, and overhanging infiltrated edges. Also on the dorsum of the right foot, on the inner side of the right knee-joint, and on the left ankle were a number of prominent knobs closely connected with the skin. Before the patient died his whole body was covered with a large number of tumor nodules.

On section there was no involvement of the internal organs. The corpora cavernosa and urethra were thickened and of almost uniform hardness. The skin of the penis is unchanged and movable. The microscopical investigation showed that the cavernous spaces were infiltrated with round cells, and in the glans and bulb it was readily apparent that the growth sprang from the endothelium of the cavernous spaces. The metastases in the skin and in the subcutaneous tissues showed a complete similarity with the primary growth in regard to the stroma and the form of the cells. Maurer considers the tumor an angiosarcoma, but wishes to call it by the name endothelioma intravasculari, to distinguish it from those interfascicular tumors which spring from the endothelium of the lymph-spaces.

Mr. Battle[4] showed a specimen of primary sarcoma of the penis before the Pathological Society of London, March 21, 1885.

The patient was first seen in 1883, when he was 60 years of age. The penis had undergone a gradual enlargement without giving rise to pain; some slight attacks of hemorrhage were the only noteworthy signs.

The end of the organ was enlarged and presented a dark and spongy appearance. There was no enlargement of the inguinal glands, no albuminuria, and no enlargement of the liver. On November 26, Mr. Battle amputated the penis close to the pubis; some transient retention of urine followed, but no inflammatory swelling disturbed the course of the case. The patient died forty-three days after operation. On section the tumor presented a smooth and elastic appearance, whilst its free surface was boggy and fungating; there was no trace of the glans; the structure of the corpora cavernosa seemed natural. Microscopically cells of various kinds were seen, of which the majority were round cells. The round cells had well-marked nuclei, and in places there was a tendency to alveolar grouping; some of the cells appeared to be of inflammatory origin.

Mr. Golding Bird[4] said that he had a case which occurred four years ago (1881). There were two lumps on the penis, one was dark colored and resembled a chancre. The growth was of the spindle-celled variety. There was no secondary deposits; the penis was amputated and the patient did well.

Dr. Seymour Sharkey[4] had seen one specimen of mixed sarcoma of the penis, which had been mistaken by the surgeon for epithelioma.

T. Holmes[5] reported a case in 1871 of melanotic sarcoma under the title of "Melanosis of the Penis."

The patient, John H., aged 52, a Welshman, who had been married for twenty years, having five children, of whom three are now living and healthy, was quite well until eight years ago, when he noticed a small, hard, black spot at the end of the penis, which slowly but gradually increased in size. Two years ago it burst, but did not discharge much, and during the last year it has been getting much worse. There is no history of venereal disease. On admission (February 11) he has a hard indurated black sore on the end of the glans penis, with a thin fluid oozing from it. There is considerable induration extending for some distance along the urethra, a slight amount of pain, and some burning during micturition. The glands in the groin are very slightly enlarged. The tumor was excised, and the wound healed rapidly, the patient being discharged in eight days, the stump of the penis being in a satisfactory state. A rather large mass of melanotic matter was found deposited around the meatus urinarius and several smaller detached masses sprang from the mucous membrane of the urethra, occupying it for about an inch of its course.

They ceased at a short distance in front of the point where the penis had been divided. Report by the Committee on Morbid Growths upon Mr. Holmes's specimen. Section showed it to be made up in the main of spindle-shaped and fusiform cells arranged in a pretty regular manner. The growth was nowhere circumscribed, but infiltrated the surrounding tissues. It was clearly a spindle-celled sarcoma, the variety of tumor which is most frequently melanotic.

E. H. Fenwick[6] reported a case of sarcoma of the left crus penis before the London Pathological Society in 1889.

"The patient, aged 36, was admitted to the London Hospital on April 30, 1888. Has always been in vigorous health. Four years ago he noticed an intermittent pain, of a shooting character in the perineum, and about five months afterwards he found a small swelling at the spot where the pain was experienced. This little lump continued to increase in size very slowly until quite recently, when its rate of growth became more rapid. *Status præsens:* Patient is a well-built, well-nourished man. An oval tumor, the size of a turkey's egg, projects from the left side of the perineum; it is tender on manipulation, its skin-covering is unattached and inflamed. It overlies the crus of the penis. There is no involvement of the urethra. The tumor was removed, and it was apparent that only a small tongue of growth had extended into the left corpus cavernosum, and that the major part of the tumor sprang from the fibrous sheath of the crus. The patient made a good recovery. The growth was very firm on section, and proved microscopically to be a round- and spindle-celled sarcoma."

Fenwick says, "Doubtless, the reason why the case here recorded lasted so long is the late and little implication of the cavernous tissue, the growth having originated in the fibrous sheath covering the crus penis."

He makes a note in August, 1890: "Patient returned with extensive recurrence in January, 1890. I removed the entire left crus, and followed the growth into the left ischio-rectal fossa. The patient made a good recovery, and when last seen, in July, 1890, had no recurrence."

W. H. Battle[7] reported before the Pathological Society of London a case of primary sarcoma of the corpora cavernosa of the penis.

Patient had noticed a swelling in the perineum for two years, and when admitted this was the size of a fist and very elastic. There were no enlarged glands. Excision was performed in January, 1893. The anterior portion of the penis was not removed. The man made a good recovery. The tumor was growing almost exclusively from the under surface of the penis and especially from the left corpus cavernosum. It also extended into the right crus, at its junction with the left, and

invaded the body of the penis. Microscopically it consisted of large-celled mixed growth undergoing myxomatous degeneration.

From the histories we are able to make the following deductions:

(1) The growth usually occurred after fifty, but Kohler's case was that of a young man twenty-one years of age, in which the disease caused death in four months after the tumor was first noticed.

(2) It is very malignant, unless the tumor is removed early, and again if recurrence takes place. Maurer's case was fatal in three months, Kohler's in four, and Porter's in seven months.

(3) The tumor usually caused no symptoms. In two cases, where the urethra was involved, there was pain on urination; in one (Fenwick's), where the growth extended into the perineum, there were shooting pains; and in another slight hemorrhages but no pain. In the seven other cases there were absolutely no symptoms noted.

(4) The urethra was slightly involved in only two cases, whilst in the others it was presumably free.

(5) The testicles were never involved, though primary sarcoma of the testicles is of common occurrence.

(6) In all the cases (except Beck's) the growths probably originated in the erectile tissue of the corpora cavernosa. In this connection Kaufmann makes the following statement: "Sarcoma is thus the only primary and besides the commonest new growth of the erectile bodies."

(7) Usually the tumors involved the penis alone. In three cases they extended into the perineum and in one into the scrotum. In two cases there was extensive ulceration.

(8) The inguinal glands were noted slightly enlarged in two cases.

(9) In only two cases was there metastasis to the internal organs; in one the liver alone was invaded and in the other the lungs and liver, besides the skin, skull, and spinal canal.

In Maurer's case there were tumors superficially all over the body and extensive ulceration in the groins.

(10) The commonest growth was the spindle-celled sarcoma, and in two cases it was melanotic.

REFERENCES.

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[2] Charité Annales, 1878, Berlin, 1880, V, 607.
[3] Kaufmann in Billroth, Deutsche Chirurgie.
[4] London Lancet, 1885, p. 520.
[5] Transactions of the Pathological Society, London, 1871–72, XXIII, pp. 175, 177.
[6] Transactions of the Pathological Society, London, 1890–91, XLI, p. 193.
[7] Transactions of the Pathological Society, London, 1892–93.

Table of Cases Reported.

Reporter.	Age.	Duration.	Result.	Symptoms.	Urethra marked.	Testicles involved.	Growth involved.	Metastases.	Character of Growth.
Porter	44	7 mos.	Died.	None.	No.	No.	Penis and perineum.	None.	Spindle celled.
Kohler	21	4 mos.	Died.	Pain on urination.	At one spot.	No.	Penis and scrotum.	Multiple of skin, skull, lungs, and liver.	Round celled.
Beck	65	9 yrs.	Recovered	. . . . .	. . . .	. . .	Whole organ behind glans.	. . . . .	Fibrosarcoma.
Maurer	50	3 mos.	Died.	None.	No.	No.	Penis.	Tumors over body; extensive ulceration.	Intravascular endothelioma of the erectile bodies.
Battle	60	. . .	Died.	Hemorrhage; no pain.	. . . .	No.	End of penis.	None.	Round celled.
Golding Bird . .	.	. . .	Recovered	. . . . .	. . . .	No.	Two lumps on penis.	None.	Spindle celled.
Seymour Sharkey	.	. . .	. . . .	. . . . .	. . . .	. . .	Penis.	. . . . .	Mixed sarcoma.
T. Holmes . . .	52	8 yrs.	Recovered	Pain on urination.	One inch.	No.	Penis.	None.	Melanotic spindle celled.
Fenwick	36	4 yrs.	Recovered	Shooting pain in perineum.	No.	No.	Penis and perineum.	None.	Round and spindle celled.
Battle	.	2 yrs.	Recovered	. . . . .	. . . .	No.	Penis and perineum.	None.	Large celled mixed growth.
C. H. Miner . .	55	8 yrs.	Died.	None.	No.	No.	Penis.	Liver.	Melanotic spindle celled.

EDITORIAL.

THE IMMEDIATE REDUCTION OF THE ANGULAR DEFORMITY OF SPINAL CARIES.

The familiar sight of angular deformity of the spine as a result of caries has probably tended to blind us to the possibility of lessening the disfigurement, and has led physicians to accept this result as satisfactory, and to assure patients that nothing could be done to improve the condition. This advice is backed by the authority of the combined writers and teachers of all ages down to the present time. It is little wonder, therefore, when Calot described some months ago his method for the immediate, forcible reduction of angular deformities of the spine that the announcement should excite almost no attention.

The matter has been taken up, however, in England by Robert Jones and A. H. Tubby (*British Medical Journal*, August 7, 1897), and their experience so fully corroborates that reported by Calot that it seems proper to make this preliminary announcement. Although Jones and Tubby confess to having regarded the accounts published by Calot, of Berek-sur-Mer, and Rédard, of Paris, in a somewhat sceptical spirit, as no doubt most other readers also did, and being further influenced by the authoritative statements contained in all the text-books that the only safe way of treating carious disease of the spine is by a long course of rest, and if deformity followed, as it very often does, it must be accepted as a lamentable but unavoidable sequence of the disease, still, they decided to put the question to a cautious trial.

The possibility of causing paresis or even paralysis, either temporary or permanent, by forcible straightening of the spine was not lost sight of, and the danger of lighting up a fresh inflammatory process or of inducing an acute general dissemination of the tubercular process were well considered.

The writers have followed the method of Calot; they prepared themselves by personal observations in the French clinics. The procedure is as follows: The patient is fully etherized and placed in the prone position, assistants then make firm, steady traction, simultaneously upon the head, arms, and legs for a few minutes. The surgeon

then makes downward pressure with his hands upon the prominence, counter-pressure being afforded by the open palms of the assistant placed upon the abdomen. It is advised that the patient's bowels be well emptied before the operation, as the assistants' hands can then readily support the anterior aspect of the spine, and so prevent a too rapid reduction of the deformity. If the projection is dorsal, counter-pressure may be made indirectly through the chest walls. The patient must be kept under an anesthetic throughout. After reduction, a plaster-of-Paris corset is applied, the head and neck being included, leaving exposed the face only. During the application of the jacket, the spine must be maintained in hyperextension, and pressure kept up on the site of the previous deformity. The most convenient way to apply the corset is by first suspending the patient by means of a Sayre's apparatus.

Owing to the difficulty of being always able to obtain a sufficient number of assistants Jones and Tubby have devised a special apparatus for making traction during the manipulations of straightening the spine.

The authors report their experience with eleven cases. In six, immediate and complete reduction was obtained; two of these, in both of which the deformity was of an extreme type, were remarkable on account of the facility with which the reduction was effected. In five cases partial reduction only was obtained; in three of these the angle was very sharp, and the disease limited to two or three vertebræ. In the other two the projection was sharp, but obtuse, and extended over six or seven vertebræ, and was accompanied by much thickening of the tissues at the site of the disease. Of the five cases of partial reduction were the first two operated upon, and on account of lack of any experience to serve as a guide less force was used than was subsequently found to be necessary to completely remove the deformity. In the other three cases the consolidation of the spine was such as to resist a large amount of force, still in all of them, although the reduction was incomplete, there was considerable lessening of the projection (estimated at about three-fourths), and an increase in the length of the spinal column of an inch or more.

In not a single case has paresis or paralysis followed the operation, and in four cases observed for two months no untoward symptoms of any kind has appeared.

The authors conclude that, although the method is still on trial as to its ultimate results, it seems to afford a good prospect of reducing the deformity without incurring dangerous consequences. They promise a more detailed account in the near future.

Calot has gone a step further, having cut down on the spinous

processes in some cases, and, after reduction, wired them together to maintain extension of the column.

Such, then, is the present status of this new procedure. If we accept the reports, as we are bound to, we must conclude that a valuable contribution has been made to the treatment of spinal caries; a treatment not appropriate until inflammatory symptoms have subsided; not applicable to all cases, and one that requires the exercise of good judgment in its execution, but still highly useful in many instances.

In this matter, as in medicine generally, the best results will follow a keen discrimination in the selection of cases, and an intelligent application of the appropriate measures.

Multiple Sarcoma of the Skin with Lymphocytosis.

Dieballa (*Wiener klinische Wochenschrift*, No. 22, 1897) reports the case of a man who, excepting repeated attacks of erysipelas, had always been well until a year prior to observation. At this time he noticed swelling of the submaxillary, cervical, axillary, and inguinal glands, and numerous small, round, painless nodes, distributed all over his body, and amounting at the time of observation to over 100. Some were extracted for examination. The patient left the hospital of his own accord and subsequently died. The diagnosis was "sarcoma multiplex idiopathicum pigmentosum Kaposii" originating in the skin, subsequently affecting the glands, and leading to the formation of numerous hemorrhagic pseudo-angiosarcomata. Numerous (ten) blood examinations revealed the following: Hemaglobin 69 to 73 per cent.; specific gravity 1052.5 to 1055.5; erythrocytes 4,000,000 to 4,545,000; leucocytes 20,400 to 36,000. Of the latter: mononuclear 88.4 to 95.78 per cent.; polynuclear 3.89 to 11.09 per cent.; eosinophiles 0.28 to 1.10 per cent. From this and several similar cases he concludes that in this disease there occurs a lymphocytosis of such a high grade and in such a pure form as is scarcely to be met with in any other affection. His case also indicates that the increase in the number of lymphocytes may occur at the expense of the polynuclear leucocytes. An experimental injection of diphtheric antitoxic serum produced within four hours a decrease in the number of lymphocytes from 32,300 to 19,800. This in conjunction with a case of lymphatic leukemia, in which the same result was attained, leads to the belief that the diphtheritic antitoxin produces a diminution of the leucocytes in the blood, not only in the diphtheritic leucocytosis, but also in leukemia and other forms of leucocytosis.

MEDICAL PROGRESS.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM PEPPER, M.D., LL.D., AND JAMES TYSON, M.D.,

ASSISTED BY

M. HOWARD FUSSELL, M.D., AND A. O. J. KELLY, M.D.

The Diagnosis of Primary Malignant Tumors of the Pleura and Lungs.

Zagari (Naples, 1896, pp. 233; *Fortschritte der Medicin*, p. 421, 1897), having observed seven cases in which *intra vitam* the diagnosis was made of malignant new growth of the intrathoracic organs, endeavors to establish a symptom-complex of the disease. In two cases his diagnoses were confirmed by autopsies; in the others, the course and accompanying symptoms made the diagnoses very plausible. To the symptoms of this long-known but often overlooked disease the following, according to Zagari, are to be added: (1) Insidious development of the disease; (2) a quite noticeable general weakness; (3) absence of fever; (4) continuous pain increasing in severity; (5) enlargement of the glands, especially or exclusively on one side of the thorax; maybe distention of the veins on the anterior or lateral aspect of the thorax; (6) increase of the temperature and profuse perspiration on one side of the thorax; (7) dyspnea; (8) irregularity in the expansion of the thorax, especially in the upper and anterior parts; (9) non-distention or enlargement of the intercostal spaces; (10) flatness on percussion, especially in the upper and anterior part of the thorax; complete dulness immediately along-side pulmonary resonance; (11) dulness over the manubrium sterni and near the sternum, indicating a displacement of the mediastinum towards the unaffected side, with the peculiarity that it is very irregular; (12) Skoda's murmur over the clavicle and sternum; (13) bronchial breathing; (14) persistence of the physical signs even after the withdrawal of large quantities of exudate; (15) character of the exudate: rich in fibrin, high specific gravity, hemorrhagic with characteristic cells; (16) sensation by puncturing of passing the needle through thick, solid tissue; (17) uselessness of puncturing, rapid reaccumulation of the fluid; (18) less displacement of the heart and liver than is occasioned by collections of fluid. Zagari believes that one may not positively distinguish between a tumor of the pleura and of the lung, but contends, in opposition to Ebstein and A. Fraenkel, that a proper consideration of the above-mentioned symptoms will permit of a diagnosis of a malignant new growth, despite the fact that the symptoms will vary in each case. It is of interest to note that in all of his cases Zagari made twenty-nine punctures, four of which were negative, and four others almost negative. Nevertheless, in all excepting one he withdrew

large quantities of fluid; at one time five litres (in this case *in toto* thirteen litres at six punctures). Cells absolutely characteristic of malignant disease appear to have been presented by none of the cases.

Tuberculosis of the Bronchial Lymphatic Glands.

Fronz (*Jahrbuch für Kinderheilkunde*, Vol. xliv, Part II, 1897) directs attention to the much greater importance of disease—that is, tuberculosis, of the lymphatic glands—in the young, compared to similar affections in adult life. Tuberculosis of the glands may give rise to a variety of symptoms chiefly dependent upon pressure, as, for instance, of the bronchi (stenosis, atelectasis, bronchitis), of the blood-vessels (distention of the veins, edema, thrombosis, arterial murmurs, hemorrhagic exudates), of nerves (vomiting, cough, asthma, hyperesthesia of the bronchial mucous membrane, rapid pulse, cardiac dilatation, if the vagus be involved, paralysis or spasm of the vocal cords, if the recurrence be involved, inequalities of the pupils, if the sympathetic be involved, dyspnea, if the phrenic be involved), and of the esophagus (dysphagia). The consequences of these various involvements are diseases of the lungs, pleuræ, mediastinum, heart, pericardium, and the general system. Important subjective symptoms are palpitation of the heart and asthmatic attacks. There may suddenly develop imminent danger to life if a caseous gland rupture into the bronchus, giving rise to symptoms of a foreign body. He reports three cases. The first, a child, aged 8 years, suddenly developed dyspnea and cyanosis, lasting twenty hours. It then remained comparatively well for two weeks, when it again suddenly developed similar symptoms, and was brought to the hospital in an apparently dying condition. Immediately tracheotomized. In the subsequent expectoration, which was partly caseous, tubercle bacilli were found. Later a tubercular infiltration of the right lower lobe ensued, but, on the desire of the parents, the child was discharged from the hospital. The second case, a child, aged 2½ years, developed also suddenly dyspnea and cyanosis. The diagnosis was rightly made of tuberculosis of the bronchial lymph-glands, the child tracheotomized, and some caseous material removed. Impossible to remove all, later some more was dislodged, causing blocking of the right bronchus and death by suffocation. The third was a very interesting case of a rachitic child, aged 14 months, who had profuse hemorrhages from the nose and mouth, some infiltration of the lungs, otorrhea, and enlargement of the cervical and inguinal lymphatic glands. The necropsy revealed an aneurism of a branch of the pulmonary artery which had ruptured into an excavated caseous gland, and as this had previously perforated a bronchus, the hemorrhage was explained. This condition must be borne in mind when dealing with hemoptysis of childhood, which fortunately is a rare condition. These later serious consequences can be avoided by early diagnosis and proper treatment. The experience of the author is that not only are syphilitic but also tubercular glandular enlargements of children greatly benefited by mercurial inunctions.

Multiple Aneurisms of the Pulmonary Artery.

Churton (*British Medical Journal*, May 15, 1897), at the meeting of the Leeds and West Riding Medico-Chirurgical Society, showed the lungs from a boy, aged 12 years, in whom a loud roaring pulmonary systolic bruit and very

highly accentuated second sound were present during life, with hemoptysis, epistaxis, and dropsy. Four of the secondary branches in one lung, and three in the other, led into aneurisms as large as walnuts, filled with blood-clots. The boy had been ill for a year. He had never been strong. He had bronchitis at the age of 4 years and again at 6; pleuritic effusion in July, 1895, and was subsequently said to have Bright's disease. In April or May, 1896, he had three attacks of hemoptysis; ascites appeared, and his face became swollen. He died in July. There were several wart-like growths, firm and smooth, on the tricuspid valve and the endocardium near it.

Auscultation of the Tuning-Fork Notes.

Malina (*Wiener medicinische Wochenschrift*, No. 23, 1897). The vibrating tuning-fork is placed on different parts of the chest anteriorly, and auscultation practised on a corresponding locality posteriorly, first during quiet, later during forced respiration; further, from time to time the patient is instructed to "hold his breath." Variations in the tuning-fork notes, both in intensity and tone, will be noticed. The former are better noted as they are easier of appreciation. Normally the note is weaker during inspiration, because of the presence of more air between the tuning-fork and the auscultating ear. This is of diagnostic importance, as there occur conditions associated with which there is little or no change in the quantity of air in the whole or part of a lung; and that part of a lung respires less can thus be more readily determined than in any other way. In tuberculosis of the apex of one lung one will notice during inspiration much less change than upon the healthy side, and thus a diagnosis may be made before any other physical signs are present. So also in pneumonia, there occurs little change (compared with the healthy side), and during the stage of infiltration at least it may be louder. Under such circumstances these changes are especially noticeable, as the unaffected side breathes more than normally, and gives rise to greater diminution of the note during inspiration. Thus he diagnosed two cases of central pneumonia, impossible of detection by other means of investigation. Cavities also increase the loudness of the note. It is diminished in emphysema and over pleural exudates. In the latter instance one can readily tell when the compressed lung begins again to respire. By auscultation of the tone on the head, one can tell when blood or pus replaces air in the frontal sinuses, etc. May also determine bone sensibility. A patient with hysteria and hemianesthesia was able to appreciate the vibrations as soon as the tuning-fork was placed on bone (almost!), as patella, tibia, etc. If the vibrating tuning-fork be placed on the patella, and auscultation practised on the tibia, the note will be found much diminished (compared to healthy side) if the joint be filled with an exudate.

Disturbances of the Ocular Muscles in Hysteria.

Kunn (*Wiener klinische Rundschau*, Nos. 22, 23, 25, 1897), as the result of an exhaustive study of the subject, comes to the following conclusions representing the possible disturbances of the ocular muscles that may occur in hysteria: (1) Disassociation of the movements of the eyes. The eyes move independently of each other in an atypical manner, there not occurring of necessity any limitation of the movements as produced by any single muscle; (2) paralyses, which may affect individual muscles or associated groups of muscles;

(3) contractures, which may affect individual muscles (spastic squint), associated groups of muscles (conjugate deviation), or both internal recti (convergent squint); (4) strabismus concomitans; (5) nystagmus; (6) conditions of paralysis or contracture of the muscles of accommodation; (7) conditions of paralysis or contracture of the muscles of the lids (blepharospasm, nicitatio, ptosis pseudo-paralytica, etc.).

Stenosis of the Trachea.

Aufrecht (*Centralblatt für klinische Medicin*, No. 1, 1897) refers to three cases observed by him, in two of which there were revealed post-mortem mediastinal carcinomata, situated at the bifurcation of the trachea, compressing it, and hindering the entrance of air into the bronchi; in the third a syphilitic gumma occupied the left wall of the lowest part of the trachea greatly obstructing its lumen. In all of these cases, by auscultating the trachea with a stethoscope in the jugular fossa, it was noticed that the loud, rough bronchial breathing, which under normal circumstances is audible during the entire inspiration and expiration, was replaced by a low soft breathing, or was not to be heard at all. He reports another case (*Deutsches Archiv für klinische Medicin*, Vol. LVIII, Parts IV and V, 1897). The patient had for years been subject to repeated attacks of cough, expectoration, and dyspnea, the latter of which was of great severity. Auscultation over the trachea revealed the normal loud, long, drawn-out inspiratory bronchial murmur replaced by a soft, short sound, and the expiratory bronchial murmur almost entirely absent. Because of this, and the marked dyspnea of the patient, the diagnosis was made of stenosis of the trachea or the two primary bronchi. The necropsy confirmed the diagnosis, a tumor mass being found greatly obstructing their lumen. Basing his opinion upon these observations, the author believes that the abolition of the normal bronchial breaking over the trachea of itself is sufficient data to justify a diagnosis of stenosis of the trachea or the two primary bronchi.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

ASSISTED BY

ELLWOOD R. KIRBY, M.D.

Closure of a Perforating Gastric Ulcer by Omentum.

Braun (*Centralblatt für Chirurgie*, No. 27, 1897) states that two cases, one recorded in this paper, in which the author fixed a piece of omentum by suture, the other in which the omentum was inserted into the opening, indicate that the application of the omentum is to be recommended whenever, in operating for perforating gastric ulcer, it is found impossible to make use of the direct suture. In the author's cases the actual perforation had been preceded by

severe and extensive peritonitis, in consequence of which the stomach was bound down by adhesions, and could not be brought into the abdominal wound. The ulcer was surrounded by a mass of firm tissue which somewhat resembled malignant disease. It was found impossible to close the ulcer by sutures in consequence of the extent and density of the adhesions. The idea of stitching an adjacent loop of intestine to the stomach then occurred, but this was rejected in favor of an omental graft. There is no great risk of the omentum being destroyed by the gastric juice because of its great vascularity. The patient made a good and speedy recovery.

Surgery of the Ureter.

Delagénière (*Archives provincial de Chirurgie, 1897*), in a review of operative procedures on the ureters, concludes that at present this branch of surgery is in its infancy, and at the present time the indications for instrumental interference are not clearly understood. The recent advance in abdominal surgery, especially the new methods of suturing the stomach, has of late encouraged surgeons to deal freely with the ureter, with diminished dread of supposed fatal results of urinary infiltration. The advance made in the study of ureteral conditions has been at the expense of renal surgery. In cases of hydronephrosis, instead of making a urinary fistula in the loin, or removing the kidney, the surgeon's attention is directed towards the re-establishment of the lumen of the ureter. The ureter can be irrigated, and ureterotomy enables the surgeon to remove an impacted calculus and relieve a condition which has been uniformly fatal.

The Radical Cure of Hernia by Injections of Chloride of Zinc.

Demars (*Semaine Médicale*, May 8, 1897) reports six cases of hernia treated by Lannelongue's method of chloride of zinc injections. Three of the cases were boys, aged from 5 to 7 years, and three girls, aged 6 to 15. In the girl of 15, some months after the cure of a congenital, a direct inguinal hernia appeared. The original operation consisted of three injections of twelve to fifteen drops of a ten-per-cent. solution of chloride of zinc into the external pillar of the ring, and thrice internally towards the pubes. The case proves the value of the method, as the original weak spot did not give way. It also shows that Malgagne's theory, that of a special predisposition of the abdominal walls, is present in cases of hernia.

The edema of scrotum and testicles following the injections appears to be of no importance. In all of the cases the cure was complete. It is much to be preferred to operative measures, because of the ease with which it can be done and the little danger associated with it.

THERAPEUTICS.

UNDER THE CHARGE OF

HORATIO C. WOOD, M.D., LL.D., AND ARTHUR A. STEVENS, M.D.

Treatment of Gall-Stones.

Brockbank in his recent work "On Gall-Stones" gives the following advice as to treatment: Warm water in large quantity certainly relieves the pain of biliary colic and the effect is increased by the addition of a little bicarbonate of sodium. It acts as a warm fomentation applied internally to the liver. Any good that alkalies may do is partly a general effect on the whole body, partly due to their aperient action, and partly to the quantity of bile excreted being increased by the quantity of fluid in the water drunk. A course at Carlsbad often does great good. Much good is often done by the administration of olive oil. The unpleasant taste may be covered by the addition of a few grains of menthol and a tablespoonful of brandy to about six ounces of oil. The dose varies from two or three to twenty ounces a day, according to the amount the patient can stand. If they cannot take it by the mouth ten ounces by the rectum will often do as well. Its beneficial action is partly due to its stimulating peristalsis, but chiefly to the fact that it is excreted in the bile. Oil, fatty acids, and sodium or potassium soaps are all good solvents of cholesterin, which is the chief ingredient of gall-stones.

The Value of an Exclusively Meat Diet in Certain Cases of Chronic Gout.

Armstrong (*British Medical Journal*, May 1, 1897) related that during the last few years he had given trial in various cases of gouty arthritis and recurrent renal calculi to a method of treatment based on the prolonged administration of only red meat and hot water. Very marked improvement had resulted, which had persisted in spite of gradual return to an ordinary dietary. His own observations on auto-intoxication in relation to the causation of gout and rheumatoid arthritis had led him to believe that it is the complex chemic changes brought about by the admixture of red meats with carbohydrates and sugar that causes the excessive formation of uric acid. His plan is to give the patient a daily allowance of from one to four pounds of lean beefsteak, minced and cooked in various ways, the patient drinking from one to five pints of hot water, and avoiding all starchy, saccharine, and fermentative articles of food. The effects observed are rapid diminution in abdominal girth, loss of fat and flabby tissue, increase in the quantity, and ultimate disappearance of urates, alkaloids, and toxins from the urine. The joint-swelling greatly diminished, the aching and pain became much lessened, and the mobility of the joints was considerably increased. The capacity for work, mental and bodily, was enhanced and the symptoms of maldigestion and disassimilation disappeared. This treatment is indicated in obstinate chronic gouty arthritis, in recurrent uric acid calculi, in frequent and intractable migraine, and in cases of persistent gouty dyspepsia. It has proved especially useful in the presence of

symptoms of amylaceous and intestinal dyspepsia and of excessive formation of hydrogen sulphide, urates, indican, skatol, creosol, and other toxins. The carbohydrates, by their affinity for oxygen, interfere with the due oxidation of the tissues. Under the plan of treatment proposed, digestion is more complete and the processes of fermentation and putrefaction are kept within narrower limits, oxidation being more perfect and less waste being consequently left in the system. Whatever poisonous matters remain in the system are readily eliminated by the taking of the hot water, which also flushes the stomach, liver, and kidneys. The treatment is irksome and trying, and must of necessity be carried out with great strictness; therefore its use should be confind to the more difficult cases. It should be prescribed but rarely, and then only under the most careful supervision in cases in which the heart or kidneys are diseased. Used with due care it is a most efficient and brilliant addition to the therapeutic measures. In the discussion Haig admitted that certain cases of gout are benefited by a meat diet, as a result of its stimulating qualities. When it fails to act as a stimulant it is likely to prove dangerous.

The External Application of Salicylate of Methyl in Rheumatism.

Lemoine (*Semaine Médicale*, May 12, 1897) reports the results obtained in nine cases of rheumatism treated by the external application of methyl salicylate after the method of Lannois and Linossier. He found that it acts more promptly in relieving the pain of acute rheumatism than sodium salicylate given internally, and in moderate amounts causes neither vertigo nor tinnitus. It is eliminated in the urine as salicylic acid to the extent of one-tenth of the quantity employed externally. The oil of winter-green, which contains 90 per cent. of methyl salicylate, is poured on a compress, covered with gutta-percha tissue, and held in place with a bandage. It should be applied directly, if possible, to the painful part, but if this is not convenient, it may be applied to the surface of a limb, the good effects being due to its absorption into the circulation. In the discussion which followed, Siredey stated that this treatment had been equally successful in the pains of locomotor ataxia and of Pott's disease. He found that twenty to thirty drops of methyl salicylate was a sufficient quantity to apply. He reported one case of intolerance in a woman who, after fifty drops, had headache and tinnitus.

The Absorption of Certain Remedies by the Skin.

In an article on skin absorption Linnard (*Bulletin Genéréle de Thérapeutes*, September 8, 1896) insists, on his previously announced law, that the healthy, unbroken skin can absorb only those substances which are in a gaseous state. Apparent exceptions are due either to unnoticed abrasions, to the irritant effect of the drug employed, or its vaporization by the bodily heat. This being true, whenever it is desirable to administer medicine by the skin, in order to achieve its maximum constitutional action, he advises enveloping the part, after application of the drug by some impermeable material, as rubber, in order to prevent the escape of the vapors into the general atmosphere.

Regarding the absorption of guaiacol, while he holds it demonstrated beyond cavil that guaiacol can be absorbed by the skin, he also believes that its powerful antipyretic action is due in part to a reflex action through the peripheral nerves.

Salicylic acid is absorbed by the skin if the part is enveloped, as he advises, with an impermeable material; a double explanation of this phenomenon is given,—viz., that it is vaporizable at the body temperature, and also that its irritant action lessens the resistance of the skin. Of mercury he says that while the experiments of Merget seem to show that the absorption of the metal, after inunction, is entirely by the respiratory tract, nevertheless, he believes that after vigorous rubbing a certain amount passes through the skin.

Glycero-Phosphate of Soda in Sciatica.

Albert Robin (*Bulletin Genéréle de Thérapeutes*, May 30, 1897) recommends very highly deep injections of glycero-phosphate of soda in sciatica. He employs one to two cubic centimetres of a 25-per-cent. solution, to be injected deeply into the muscle as near as may be to the nerve. Of sixty-three cases treated in this manner forty-one were cured, eighteen ameliorated, while in only four was the treatment a failure. Constitutional treatment is not to be neglected when the neuralgia is a symptomatic one.

Potassium Iodide in Lactation.

Fieux (*Revue Obstétriques Internationale*, May 1, 1897) has studied the action of potassium iodide on nursing women. As a result of six observations he states that the drug does not delay the appearance of milk after labor; that it does not interfere with the course of lactation, and that the infant does not suffer from its administration. He believes, therefore, that the fears of potassium iodide, when administered to a syphilitic mother, interfering with her functions as the nurse of her own child are altogether imaginary.

Rectal Feeding in Typhoid Fever.

For some time past Dr. Queirolo, professor of Clinical Medicine in the University of Pisa (*Lancet*, August 7, 1897), has been in the habit of feeding his cases of typhoid fever entirely by the rectum in order to afford the diseased bowel complete rest. The nutrient enemata are given four times daily, and consist of triturated meat and pancreas with a few drops of laudanum, each injection being preceded by irrigation of the bowel with boracic acid,—the plan, in fact, advocated by Leube. The patients are allowed to drink hydrochloric acid lemonade. In this way the digestive tract is preserved from putrescible substances, and this Dr. Queirolo considers obviates one of the most fruitful sources of auto-toxic action. All the cases treated on this system, many of them of a very severe type, are stated to have recovered.

Nutritive Effect of Subcutaneous Injections of Oil.

Drs. Fornaca and Micheli, of Professor Bozzolo's clinic in Turin (*Lancet*, August 7, 1897) have made a series of trials of the effects to be obtained by injecting oil under the skin. They find that a dose of from 30 to 200 grammes introduced in this way is rapidly absorbed, and that it produces a marked decrease in the quantity of nitrogen eliminated, thus, of course, allowing more to remain in the tissues without undergoing metabolic change, the body weight

increasing and the general condition being improved. It would appear that oil introduced subcutaneously has much the same nutritive value as when it is ingested, and produces better effects than when it is injected per rectum. Indeed, it seems to these investigators that the hypodermic might be substituted for the rectal method in most of the cases in which the latter is usually employed. Two of the subjects on whom observations were made were suffering from diabetes. In one of these cases 1780 cubic centimetres were injected in the course of thirteen days, and produced a remarkable diminution in the quantity of nitrogen eliminated and in the amount of sugar excreted, together with a slight increase in the body weight. No alteration was found in the quantity of urine passed. In the other case it was not possible to inject more than 310 grammes in four days, but even this small amount produced some decrease in the amount of nitrogen eliminated.

Veratrum Viride in Puerperal Convulsions.

Thayer (*Boston Medical and Surgical Journal*, April 1, 1897) says that in the condition of the nervous system that exists in puerperal convulsions, there is a peculiar tolerance of veratrum viride, so that the officinal dose has no effect. But large doses quiet the nervous erethism, producing a decided effect in a short time,—sometimes in fifteen minutes, but almost certainly within an hour,—and keeping the nervous system under control for several hours.

The administration is followed by cooling of the surface, great lowering of the pulse in rate but not in strength, and along with this complete arrest of the convulsions. The state of the pulse is the guide in treatment. From a high rate, which rules in the disease, it is reduced to the normal standard or below it; and while it is kept below 60 there need be no fear of a recurrence of the paroxysms. When this effect has been once produced, it will continue several hours, and a single dose will do it; if not apparent within an hour or less, the medicine must be repeated in smaller doses; and it can be safely repeated at intervals until the pulse begins to fail. With the pulse for a guide, no untoward symptoms need occur from its use; the pulse may be brought down to 50, without any general depression; if carried so far as to produce vomiting, we may find great prostration produced by the nausea, which is overcome within thirty or forty minutes by opium, or any diffusible stimulant,—perhaps in less time by a solution of morphine hypodermically.

Preparations of Iron in Chlorosis and Anemia.

This subject was recently discussed at a meeting of the Société de Thérapeutique (*New York Medical Journal*, May 1, 1897) by M. Bardet. He said that the majority of authors regretted that it had been generalized by including in it the treatment of various forms of anemia, instead of limiting it to chlorosis. He, however, was of the opinion that when it was necessary to use iron preparations the special treatment became the same in chlorosis as in simple anemia. It has been well said that in the treatment of anemia the principal indication was to remove the cause, and then the anemia would disappear. But, he said, it was none the less true that the iron treatment played a great part in therapeutic intervention, and consequently it would be prejudicial to leave out anemia in a discussion on iron treatment. Moreover, he doubted whether it

was correct to profess to be able to remove the cause in all cases. The value of different preparations of iron had been the subject of much discussion, but Bardet was convinced that all these discussions were useless, and that all iron preparations were good or bad according to the particular cases, not forgetting that everything depended on the absorption, and that this was itself dependent exclusively upon the digestion; and as this was a most complex phenomenon, varying according to the individual, certain preparations might prove good for some persons and bad for others. With regard to the different iron preparations, Bardet preferred hemoglobin, although there was another preparation which he thought should not be forgotten in a discussion on this subject. This was glycero-phosphate of iron, which he thought was destined to take an important place in therapeutics. Up to the present time it had not been easy of employment owing to the difficulty in preserving it. Bardet, however, had made use of this salt in anemic persons by combining an organic preparation of iron with the glycero-phosphate of iron, and particularly with the phospho-glycerate of lime. He had employed these combinations for the past three months with the best results.

OBSTETRICS.

UNDER THE CHARGE OF

BARTON COOKE HIRST, M.D.,

ASSISTED BY

RICHARD C. NORRIS, M.D., AND FRANK W. TALLEY, M.D.

The Neuroses in Pregnancy and Labor.

The action of hysteria, epilepsy, and chorea on pregnancy and labor is treated of by Tarnier (*La Presse Médicale*, No. 29, 1897). He finds that hysteria is, in a small percentage of cases, favorably influenced by gestation. In a very few cases the hysteric symptoms entirely disappear during the progress of gestation; in others they are ameliorated; while in still others the hysteria becomes much more pronounced than before the pregnancy began. This latter, according to Landouzy and others, is the usual course. There is no tendency to abortion or to premature labor in pregnancy complicated by hysteria, nor is life jeopardized. The treatment consists in the exhibition of bromides.

When epileptic women become pregnant, in one-half the cases the neurosis is favorably influenced by the gestation; the epileptic seizures diminish in number and in intensity. Of the remainder of the women one-half show an aggravation of the epilepsy, the spasms becoming more frequent and more severe, and even resulting fatally. In the remaining half no influence seems to be exerted either way. According to Tarnier, when improvement in the epilepsy ensues, it is the direct result of the cessation of menstruation. Should an epileptic convulsion occur in labor, which is rare, it is readily controlled by inhalations of chloroform. The difficulty lies in the differentiation between epilepsy and eclampsia, and this can be determined only by careful urinary and hemic examination. Epileptic pregnant women require potassium bromide in large daily doses (one to two drachms).

Chorea, unlike the two preceding neuroses, is a very serious complication of pregnancy, giving a mortality of from 28 to 30 per cent. Some of the patients die suddenly from asphyxiation. Others become paralyzed, and still others maniacal. Abortion or premature labor occur in 20 per cent. A history of rheumatism or chorea prior to pregnancy is to be noted in many of the cases. Arsenic, quinine, and tonics constitute the treatment.

Utero-Abdominal Gestation at Term.

Leopold (*Archiv für Geburtshülfe und Gynäkologie*, Band LII, p. 376) reports the case of a woman, aged 42 years, in her twelfth pregnancy, who ruptured her uterus two or three weeks before quickening by falling down the cellar-stairs, striking upon her sacrum and nates. Neither hemorrhage nor abdominal inflammation followed, and she soon recovered. When the fetal movements began, however, they caused such severe abdominal pain as to keep the patient almost completely bedridden. They ceased about three weeks prior to term, and the patient then complained of hot and cold sensations, headache, and much discomfort. There was no discharge of blood or decidua. On admission to the hospital a diagnosis of left-sided extrauterine pregnancy was made, with a probable mature fetus dead about three weeks. On making an abdominal section the fetus was discovered lying in a thin sac; it was extracted by the head, and the pelvis and feet, which lay near the pancreas, on escaping were followed by a coil of small intestine, with which they were probably in direct contact. The umbilical cord passed into the uterus through a perpendicular opening about two centimetres long, situated behind the right broad ligament. The uterus was removed with the placenta, the stump being fastened to the abdominal wound, and gauze drains introduced into the pelvis and fetal cavity. An uninterrupted recovery followed, and the patient left the hospital on the forty-fourth day. In explanation of the rupture Leopold advances the theory that the uterus was unduly softened as the result of numerous previous pregnancies; the direct cause of the rupture was a violent impact of the posterior uterine wall upon the sacral promontory. The reflexa was at every point in absolute contact with the uterine wall; hence, the rupture could not have occurred prior to the seventeenth week. He also concludes that, as the placenta remained *in situ*, it is likely that a sudden escape of liquor amnii could not have occurred, but that the membranes had probably protruded through the uterine rent, the extrusion of the child being also a gradual process. The fetus was a male, fifty centimetres long, and weighed 2720 grammes. It was covered with vernix caseosa and was slightly macerated. The cord was of mature length (forty-nine centimetres). The posterior uterine wall, which was very thin, showed a cicatrix six centimetres long and two centimetres thick, in the centre of which the opening presented. There was a supplementary placenta.

The Influence of Fetal Death on the Albuminuria of Pregnancy.

Lannois (*Lyon Médicale*, January 10, 1897) reports the case of a woman, 33 years of age, who twelve years before had given birth to a child. Five years afterwards she developed tuberculous disease of the right metacarpus and right astragalus. At a subsequent pregnancy, during the fifth month, the fetal movements having already been noted, she suddenly developed dyspnea and anasarca, and examination revealed a large amount of albumin in the urine. It is not

stated whether or not albuminuria existed prior to pregnancy. Her condition one month later was much worse, and the fetal heart-sounds became feeble and irregular. Suddenly the patient experienced great relief, and examination showed that fetal death had occurred. Seventeen days later the macerated fetus was spontaneously expelled. At this time the albuminuria was greatly diminished, the edema had almost entirely disappeared, and a large amount of urine was excreted, while the dyspnea was very slight. A few days subsequently the patient suffered from an attack of pericarditis and right-sided pleurisy, necessitating thoracentesis; she recovered, the amount of albumin in the urine remaining stationary, and a few hyaline casts appearing.

New Method of Treating Placenta Prævia Centralis.

Nyhoff (*Monatsschrift für Geburtshülfe und Gynäkologie*, Band iv, Heft 5, S. 405) describes his method of treating the central variety of placenta previa. A finger is passed through the cervix as soon as dilatation begins, and an opening is made through the placenta, the amniotic sac being left intact. Through the opening thus made the amniotic bag will protrude, gradually enlarging the aperture by further tearing the placental tissue as the cervix dilates; hemorrhage is prevented partly by pressure from the liquor amnii and partly by failure of separation of the placenta from the lower uterine segment. This method, which is contraindicated in all cases of placenta prævia lateralis and when the pains are weak, offers the following advantages: (1) It does not interfere with the normal progress of labor; (2) no anesthetic is required; (3) it may be used in combination with an antiseptic vaginal tampon; (4) the child may be delivered slowly, whereby secondary hemorrhage may be avoided and lacerations of the maternal soft parts not produced.

GYNECOLOGY.

UNDER THE CHARGE OF

CHARLES BINGHAM PENROSE, M.D.,

ASSISTED BY

H. D. BEYEA, M.D.

Complete Excision of the Uterine Mucous Membrane in a Case of Chronic Hemorrhagic Endometritis.

Casati (*Raccoglitore Medicina*, No. 1, 1897; *Centralblatt für Gynäkologie*, No. 27, 1897). In a case of chronic, recurrent, hemorrhagic endometritis the writer has performed the following operation with a very satisfactory result: After opening the abdominal cavity the patient was placed in the Trendelenburg position. The uterus was then drawn forward and by a median longitudinal incision through the posterior uterine wall the uterine cavity was opened. The entire mucous membrane with a portion of muscular tissue was then excised,

the wound surfaces cauterized with a ten-per-cent. solution of chloride of zinc, and the uterine wound closed by layers of suture. The uterus was then ventrofixed. The abdominal wound was closed except at its lower extremity, which was allowed to remain open until the wound in the uterine wall had completely closed, when it was also closed by a secondary suture.

Primary Sterility.

Vedeler (*Centralblatt für Gynäkologie*, No. 26, 1897) reports his investigation of 310 sterile women, all of which had been married more than one year. Seventy-two had been married ten or more years, and the average duration of married life in the remaining was three years. The examination of fifty of the husbands of these women determined that thirty-eight surely had had gonorrhea, and it was also determined that thirty-four (68 per cent.) of these had infected their wives. He says if it can be concluded that the result of the examination of these fifty sterile marriages be correct, then two hundred and thirty-five of the three hundred and ten husbands must have had gonorrhea, and also that two hundred and ten wives were infected. That this last approaches the truth is shown in that, in one hundred and ninety-eight (44 per cent.) of the three hundred and ten women examined the same inflammatory signs of gonorrhea were found as in the above thirty-four, whose husbands undoubtedly had had gonorrhea.

Bicycling for Women.

Theilhaber (*Münchener medicinische Wochenschrift*, No. 48, 1896) believes that bicycling for women, when not participated in to excess, is an excellent body-gymnastic. He advises that women should not, as a rule, ride faster than fifteen to eighteen kilometres (nine to eleven miles) per hour, and the maximum day's journey should not be more than fifty to sixty kilometres (thirty-one to thirty-seven miles). The exercise does not cause hyperemia of the internal genitals. A comparison between bicycling and running a sewing-machine is false, the forms of movement completely differ. That a tendency to masturbation originates from friction of the external genitals when the rider sits in the upright position is not true, except, perhaps, where the labia are widely separated. This is avoided by employing the Christy or a similarly constructed saddle. A relative increase of the sexual desire usually occurs, but this is explained by the accelerated metabolism and excited action of the regulative functions. Abrasion of the genitals or even pruritus are frequently observed, particularly in fat women, and those who perspire profusely. In time, however, this tendency disappears, as the tissues become more resisting. To avoid this the writer recommends the Thomann, Büttner, or Christy saddle, and he has in many cases employed zinc ointment as a prophylactic. That only one group of muscles is strengthened is not true or is labor hindered through hypertrophy of the muscles at the pelvic inlet. He advises that the dress should be hung from the shoulders and made of woollen material, also that no corset or girdle should be worn. Diseases, like chronic bronchial catarrh, pleural thickening, certain forms of phthisis, and some cases of heart-disease, he believes, are benefited if the greatest care is observed. Bicycling is particularly to be recommended for nervous diseases,—neurasthenia, hysteria, and neuralgia of certain nerves. Anatomical diseases of the nervous system are improved. It is useful

in general muscular weakness and chlorosis, when not participated in to excess; in gouty and lythic acid diathesis, diseases of the stomach of nervous origin, atony of the intestines, the latter, however, often follows. He recommends it for the amenorrhea of chlorosis, and where there is an undeveloped uterus. In nervous dysmenorrhea it should be permitted where there is cervical catarrh, flexions and versions of the uterus. Hemorrhagic endometritis, gonorrhea, tumors, diseases of the bladder, pregnancy, and during the menstrual flow are contraindications. In two instances the writer has observed fibroid tumors rapidly increase in growth from this cause, and two of three pregnant women under observation aborted. Its influence on hemorrhoids and varices varies. He believes, considering the large number of women now enjoying this sport, deleterious influences are very rare.

Regarding the Worth and Results of Electrotherapy in Gynecology.

Pitha (*Centralblatt für Gynäkologie*, No. 27, 1897) reports the results gained in Powlik's clinic from the application of electricity as a means of treatment of fibroid tumors, cases of metrorrhagia from various other causes, and of menstruation anomalies. It was employed in cases of small and middle-size fibroid tumors, eight of the cases having hemorrhage, two pain, and three pressure symptoms. In the eight cases having metrorrhagia the hemorrhage was constantly lessened, and in two cases the tumor and uterus were diminished in size. One of the patients died suddenly, and in another, four weeks after the last application, the tumor became gangrenous, septic fever followed, and although an attempt was made to save her life through operation, she died of sepsis. Those cases where there was associated pain, either during or independent of menstruation, and where there were pressure symptoms, were relieved. Of four cases of metrorrhagia, one virginal, one climacteric, and one endometritic were cured; the other, endometritic, was improved. Two cases of amenorrhea were not benefited after five and seven applications. One case of dysmenorrhea was improved.

The Influence of Bicycling on the Kidneys. A Contribution to our Knowledge of Physiological Albuminuria.

Mueller (*Münchener medicinische Wochenschrift*, No. 48, 1896) has carefully investigated the urine of twelve persons after severe muscular exertion in bicycle-riding with the following results: In the urine of eight of eleven examined, or 72 per cent., he found albumin, and in eight of twelve, or 58 per cent., a considerable number of all forms of casts, in six of which the casts were as numerous as is seen in acute and chronic forms of parenchymatous nephritis. In two, or 16 per cent., he found a few true hyaline casts with albumin, and in another there were casts of every variety and kidney epithelium, but no albumin. Only two urines, or 16 per cent., were constantly normal. The investigations confirm those of Stablewski and Leube, that muscular exertion can cause albuminuria. It is therefore a physiological or functional albuminuria of short duration. It differs from other forms of physiological albuminuria, in which few or no casts are found. The casts here, however, were only found with the centrifuge, after forced riding, racing, and excessive muscular exertion. That frequently repeated over-exertion in bicycling might

develop chronic irritation, perhaps true chronic nephritis, appears from the observation of two other cases improbable.

Resection and Ignipuncture of the Ovary.

Pozzi (*Revue de Gynécologie et de Chirurgie abdominale,* January and February, 1897, *American Journal of Obstetrics,* May, 1897) reports the results of five years' conservative work upon the ovary, prefacing his remarks by a review of the cases reported by others. When applied to cases of chronic oöphoritis integrity of the tube is essential. Its reconstruction is possible, but the uterine extremity is generally somewhat closed, and its ciliated epithelium and contractility lost. Creation of a new abdominal ostium is not advised, but if contracted it may be dilated. Conservative treatment is advised in cases with large follicular cysts, cysts of the corpus luteum, and sclero-micro-cystic oöphoritis, the character of each of these being described. If the lesions are relatively large, resection is to be chosen; if small, resection of the region containing the small cysts, or ignipuncture separately or combined.

Simple puncture with a bistoury does not destroy the cyst wall and it may recur; ignipuncture sterilizes and favors resorption of sclerotic tissue rather than causes the formation of new connective tissue. Before operating the two ovaries should be compared; if one is diseased it should be removed and the other saved; if both are altered, bilateral conservation is proper. The portion to be removed is circumscribed by two deep incisions with the knife, and the removal completed with scissors. If raw surfaces show small cysts ignipuncture is added. Oozing from the cut surfaces is diminished by slight cauterization with the thermo-cautery at dull heat. The wound is closed by continuous suture from one end to the other and returning to the same point; two tiers are used, if necessary, though one usually stops the hemorrhage. If this continues, one or two deep sutures of fine silk are used. Ignipuncture is performed with the Paquelin cautery at a cherry-red heat, being introduced for one or two seconds at points found by palpation to be depressible. If necessary, the ovary is hemisected and cysts found in its interior are cauterized, any vessel which bleeds persistently being tied with fine catgut. Complementary operations include abdominal hysteropexy for retroflexion, and salpingorrhaphy when there is danger that the tube may become adherent at a distance from the ovary, the abdominal ostium being first enlarged by a sound or reopened by salpingotomy, if closed, rather than by salpingostomy,—the formation of a new opening. Extirpation of small parovarium cysts, which he considers responsible for some of the pains and troubles of menstruation, is performed by an incision into the broad ligament between the tube and cyst, near the latter, partial enucleation of the cyst, completed by scissors, and light cauterization of the bleeding surface. The condition of the vermiform appendix should be examined. Pozzi gives the results of sixty-two conservative operations upon the ovaries, all recoveries; but four of whom have been too recently under treatment to make the result conclusive, and ten of whom have disappeared. Of forty-eight traced, thirty-three were entirely cured or greatly improved; seven unchanged; eight required radical operation subsequently; twelve have become pregnant, one twice; of these there were after unilateral conservation eight pregnancies,—five normal labors, two now nearly at term, one abortion; after bilateral conservation, four pregnancies,—three normal labors, one abortion.

PATHOLOGY.

UNDER THE CHARGE OF

JOHN GUITÉRAS, M.D.,

ASSISTED BY

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Is there a Fatty Degeneration?

Rosenfeld (Fünfzehnte Kongress für innere Medicin, Berlin, June 9 to 12, 1897; *Centralblatt für innere Medicin*, June 26, 1897) has tried to solve in an interesting manner the question whether there is such a thing as fatty degeneration, and has arrived at the conclusion that there is no such process. The differentiation of fatty processes into two—infiltration and degeneration—was based on the hypothesis of the origin of fat from albumin, which hypothesis, the author tells us, has been disproved by Pflüger. He (Rosenfeld) has investigated many of the conditions in which fat is apparently formed from albumin, as the fatty liver of phloridzin- and phosphorus-poisoning, and the formation of milk. In fasting animals receiving phloridzin, fat to the amount of 75 per cent. is stored in the liver. But this fat cannot be derived from the albumins of the hepatic cells, for the quantity of albumin in the liver is not materially diminished.

The fat has been carried from the "fat-depots" to the liver, as may be observed in dogs that having through long starvation become devoid of fat, are then fed with a foreign fat,—*e.g.*, sheep-tallow. When such sheep-tallow dogs are given phloridzin, the sheep-fat is carried from the subcutaneous tissue to the liver, in which nearly 50 per cent. of such fat may then be found. In phosphorus-poisoning the fat is also only infiltrated, for in totally fat-free animals phosphorus-poisoning is not able to produce fatty liver, because the fat-depots are empty. If the fat originated from albumin, it is difficult to understand why it is not formed from the abundant albumins present. If the sheep-tallow dog is poisoned with phosphorus, the fat is carried from the depots to the liver, which may store as much as 40 per cent. of sheep-tallow. That the fat in the milk is not derived from albumins was shown by the following experiment: A sheep-tallow slut was allowed to become pregnant, and then received only the leanest meat. The fat in the milk was sheep-fat, hence it cannot have been formed in the body of the animal, for then it would have been dog-fat, but must have been conveyed to the mammary glands from the fat-depots.

The theory of a fatty degeneration, the author insists, must be entirely relinquished; in its stead is to be placed that of an albuminous degeneration of the cell; this injury to the cell is followed by the infiltration of fat as a reparative attempt.

The fat of the organism consists of the fat of the food and that formed from the carbohydrates.

Acute Leukemia.

Benda (Fünfzehnte Kongress für innere Medicin, Berlin, June 9 to 12, 1897; *Centralblatt für innere Medicin*, June 26, 1897) describes the anatomic lesions

observed in seven cases of acute leukemia. Characteristic are the hemorrhages into the tissues and the regional adenopathies. The splenic tumor differs from that of acute infectious diseases in being less soft and not so large. A peculiar lesion of the veins was also constantly observed. The walls were permeated by numerous lymphomatous nodules, which, however, did not seem to lead to thrombosis. The chief blood change is an increase of uninuclear elements.

Serous Meningitis.

For the best and the first exhaustive exposition of this subject we are indebted to Quincke (*Volkmann's Sammlung*, 1893, No. 67). The pathology of the condition is still in dispute, although the general belief is that it is an inflammation, a meningitis, or ependymitis, of serous character, analogous to serous pleuritis, synovitis, or pericarditis. Three cases, with autopsies in two, have recently been reported by Morton Prince (*Journal of Nervous and Mental Diseases*, August, 1897).

The disease occurs at all ages, usually causes internal hydrocephalus, and may be acute or chronic. The etiologic factors are trauma, mental strain, alcoholism, otitis media, and acute infectious diseases. Microscopic examination of the ependyma in one of Prince's cases showed only a slight increase in the neuroglia lying beneath the ependyma, and no evidence of any inflammatory change.

Changes of the Central Nervous System in the Course of Infections.

Marinesco (*Semaine Médicale*, July 28, 1897) has examined the spinal cord and brain in a number of individuals that had succumbed to infectious diseases, such as pneumonia, broncho-pneumonia, typhoid fever, small-pox, erysipelas, miliary tuberculosis, etc., and found lesions in the majority of cases. The changes in the cells varied greatly in intensity, and showed gradations from partial chromatolysis to degeneration of the cytoplasm. The same variability existed in the interstitial and vascular changes. In some cases (pneumonia, broncho-pneumonia, etc.) he noted a genuine meningitis, with extension along the pial trabeculæ, and the presence of diplococci. Besides well-marked leucocytic infiltration, he also observed interstitial nodules of neurogliar cells situated at times in the gray, at times in the white matter. Although there was great variability, it seemed as if diseases attended with leucocytosis provoked especially vascular changes. [The author, to our surprise, includes miliary tuberculosis among the diseases characterized by leucocytosis.]

Other infections by reason of their toxins exert a harmful influence on the nerve-cell. The age of the patient, the duration of the disease, the height of the temperature, are other important factors. But whatever the factors may be, it is evident that the more intense the nervous phenomena, the greater the interstitial and parenchymatous lesions in the nervous system.

Some Complications and Terminations of Influenza.

A. Fraenkel (*Berliner klinische Wochenschrift*, April 12, 1897), in an address on this subject, gives a very good description of influenza-pneumonia. This form of pneumonia is characteristically lobular, the inflammatory process

spreading from the bronchi to the alveolar passages and alveoli. Microscopically, these spaces are all densely and almost exclusively filled with leucocytes. In the bronchi their number is so great that they not only penetrate between the epithelial cells, but even cause a partial detachment of the epithelial lining. As the interstitial connective tissue, especially the peribronchial, is often also infiltrated with round cells the appearance is frequently such as to suggest that the process has already advanced to suppuration. The absence of fibrin is noteworthy, and is one of the reasons why the infiltration has to the naked eye a smooth appearance. The influenza bacillus can, however, produce a fibrinous pneumonia, although the author admits the possibility of a superadded pneumococcus infection in cases of fibrinous pneumonia developing in conjunction with influenza-pneumonia.

As a terminal stage of influenza Fraenkel mentions, among others, pulmonary gangrene, which occurred in 7.5 per cent. of his cases of influenza-pneumonia. An occasional result of the rupture of a gangrenous area is putrid pleurisy, which may be interlobular, and is then difficult of diagnosis. The arterial and venous thromboses sometimes occurring during the course of influenza, the author ascribes to changes in the intima produced by the poison. Arterio-sclerosis may follow influenza.

Transmission of the Agglutinating Substance by the Breast-Milk.

Widal and Sicard (*Semaine Médicale*, July 28, 1897) found that mice, the serum of which they had endowed with the agglutinating property, transmitted it to their young, while guinea-pigs and cats under the same conditions did not. The ingestion of strongly agglutinating goat's milk by man does not transmit the reaction to the blood.

These differences in the transmissibility of the agglutinating substance by way of the digestive tract are at present not explicable. The writers are not prepared to discuss the question of the influence of the digestive chemism, but recall the fact that agglutinating milk coagulated naturally or by the action of an acid, such as acetic or hydrochloric acid, loses only a small part of its agglutinating power.

BOOK NOTICES.

The Diseases of Infancy and Childhood for the Use of Students and Practitioners of Medicine. By L. Emmett Holt, A.M., M.D., Professor of Diseases of Children in the New York Polyclinic; Attending Physician to the Nursery and Child's and the Babies' Hospitals, New York, etc. 8vo, pp. 1117. New York: D. Appleton & Co., 1897.

The multiplication of books in diseases of children shows better than anything else the wonderful development of interest in the sub-

ject which the past five years have witnessed. Pediatrics now covers so large a field that writers find it impossible to do justice to it in one volume; they are compelled to omit surgical diseases, and many of them make but scant reference to diseases of the skin and nervous system. In the present volume the author declares that the pathology and symptomatology of disease in children who have passed their seventh or eighth year differ little from those of adults, and he takes advantage of this fact to limit his book to disease as seen in infancy and early childhood. At this period of life the subject of nutrition is of paramount importance.

The author has had for many years exceptional opportunities to study the morbid anatomy of diseases of children. He has, therefore, been able to add much to the value of his book by full descriptions of the pathology and lesions of the respective diseases. But in spite of his own exceptionally large experience, he has not hesitated to make his book still more valuable by the collected experience of others, especially in the form of statistics. The article on intussusception is an admirable instance of this. All the diseases of the stomach and intestines are treated in a thorough and practical manner. The author's principles of treatment are excellent. We wish they could be instilled into the minds of all students. Occasionally he seems to be too vigorous, as when he advises the application of mustard paste all over the body for cold extremities and subnormal temperature occurring in cholera infantum (p. 337). But this treatment, no doubt, sounds worse to the ear than it would appear to the eye if carried out by the author.

The chapter on diseases of the lungs is also one of the best in the book, though it is not easy to say what is best when all is of such a high order of excellence. The author has evidently not only had an extensive experience with diseases of the lungs, but he has studied his cases carefully, and has been able in many instances to study the morbid anatomy of his fatal cases. He states that gangrenous areas were found in six of his cases of acute broncho-pneumonia; while abscesses were noted in seven per cent. of his autopsies. The latter were usually minute and multiple, and could not be recognized clinically. They may be found, he says, in prolonged cases, in those of unusual severity, as shown by excessively high temperature and rapid extension of the disease, and in very delicate subjects. "The microscope shows that these abscesses usually begin as an accumulation of pus in the small bronchi whose walls become softened and break down on account of the intensity of the inflammation." The illustrations of the minute morbid anatomy of these cases of broncho-pneumonia are beautiful.

But the volume before us is not only complete and satisfactory in respect of the ordinary diseases; there are also excellent sections on cyclic vomiting, the disorders of sleep, injurious habits of infancy and childhood, and the urine, subjects too often entirely neglected in works on diseases of children.

We consider the book a most valuable addition to the literature of pediatrics.

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